

COOPERATIVE MARKETING OF FLUID MILK

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CONTENTS

	Page		Page
Introduction.....	1	Seasonal variation and production control plans.....	29
Development of milk-marketing associations.....	2	The basic surplus plan.....	31
Cooperatives of the Philadelphia milk shed.....	4	The contract plan.....	38
Development in the New York milk shed.....	6	The plans compared.....	45
Development in other sections.....	8	Price policies and plans.....	46
Chicago milk-producers' strike.....	11	Price methods of some individual cooperative associations.....	51
Other strikes follow.....	11	Some representative associations.....	60
Influence of United States Food Administration.....	13	Dairymen's League Cooperative Association (Inc.).....	60
Legality of associations questioned.....	13	Maryland State Dairymen's Association.....	63
The Capper-Volstead Act.....	14	The Inter-State Milk Producers' Association.....	69
Present status of fluid-milk cooperatives.....	15	Connecticut Milk Producers' Association.....	73
Types of associations.....	17	The Dairymen's Cooperative Sales Co.....	75
Bargaining associations.....	17	Cooperative Pure Milk Association.....	79
Operating or marketing associations.....	20	Twin City Milk Producers Association.....	81
Organization of milk-marketing associations.....	21	California Milk Producers Association.....	84
Pooling practices.....	22	National Cooperative Milk Producers Federation.....	86
Financing milk cooperatives.....	23	Appendix.....	88
Sources of capital for current operating expenses.....	24		

INTRODUCTION

Fluid-milk marketing associations marketed approximately two-fifths of the milk sold in the United States during 1928. This milk had a value of more than \$325,000,000. The rapid growth of cooperative milk-marketing associations began during the World War. Much of the time since 1920 has been spent in strengthening and perfecting the associations already organized.

Economic forces assert themselves quickly in the fluid-milk market. The fluid-milk cooperative that neglects economic laws finds itself in difficulties. This fact has been important in placing these associations among the most efficient cooperative organizations.

In delimiting their fields of operation these associations have had to observe economic boundaries rather than those of political sub-

¹The Division of Cooperative Marketing was transferred by Executive order from the U. S. Department of Agriculture to the Federal Farm Board, Oct. 1, 1929.

divisions. Each milk shed has problems peculiar to its market; yet there are certain interrelationships and similarities among them. Through the medium of cooperative marketing, milk producers near many of our large cities have been brought into close contact with their marketing problems.

A study of fluid-milk marketing organizations in the United States was completed by the Division of Cooperative Marketing of the Bureau of Agricultural Economics in 1929. A survey was made of the development and methods of operation of each association in its particular market and of the economic conditions under which the organization operates. Data were obtained through interviews with officers and members of the associations, who generously opened their records and gave other assistance to those who conducted the study, and from material on file in the Division of Cooperative Marketing. The principal findings from the study are presented in this bulletin.

DEVELOPMENT OF MILK-MARKETING ASSOCIATIONS

The sale and distribution of fluid milk by the producer to the consumer was one of the earliest forms of fluid-milk marketing and is still the practice in many of the smaller towns. With the growth of the cities, each farmer could not so well have personal contact with his customers, and the practice of selling his milk to a distributor grew up. Moreover, sanitary regulations in some cities made necessary a greater investment and the purchase of more elaborate equipment than was profitable for a small family business.

In almost every city many of these small distributors began to operate, each with a business somewhat larger than the family unit, but not distributing a large proportion of the total supply. Gradually the more efficient increased their business, and consolidations took place. At present there are many cities in which one distributor sells more than half of the milk marketed.

The object which the producers had in mind in forming most of the earlier cooperative-marketing associations was the retail distribution of milk. They felt that the distributor was getting more than his share of the consumer's dollar. By retailing the milk used for fluid consumption and processing the remainder, they reasoned that they would not only receive the same wholesale price that they received under the private-distributor system but would obtain the distributors' share of the profits, which they believed to be exceptionally large.

These cooperative-marketing associations, which were established principally in the small or medium-sized cities, operated a plant and distributed milk on regular routes. The operations were usually on a small scale, and milk came from close-in territory. This fact made it easy for the producers, who were as a rule personally acquainted, to get together in cooperative effort and rendered elaborate organization unnecessary.

In other cities, particularly the larger ones, where a greater amount of capital was necessary to enter the distributing business, the producers came together in a cooperative organization for the purpose of determining what would be their terms of sale and of obtaining

power to negotiate with the distributors as to prices. This type of producers' cooperative organization became known as the bargaining association. It owned no facilities for and had nothing to do with physically handling the milk. Because the bargaining association had no effective method of enforcing its demand in case the distributors refused to accept its terms, some groups of producers, who wished to wholesale their milk but not distribute it, established facilities for receiving the milk in the country and city. They constitute another class usually termed the operating or marketing associations.

The growth of cooperative fluid-milk marketing associations previous to the World War was slow. The first such association formed which is still in existence and reporting to the United States Department of Agriculture was formed in 1882. This department has record of only 4 such associations established before 1900. Three of those established from 1900 to 1910 are still operating; 7 of those established from 1910 to 1915; 57 of those established from 1915 to 1920; 76 of those established from 1920 to 1924; and 12 of those established from 1925 to 1928. Only 14 of the 159 active associations reporting to the Department of Agriculture were established prior to 1915; the large growth in numbers came principally in the 10-year period from 1915 to 1925. Some of those formed since 1925 have been formed in places where others had failed. The record of increase in numbers is shown in Table 1.

TABLE 1.—*Cooperative milk-marketing associations: Period of organization and type*

Period organized	Retail distribution	Wholesale distribution	Bargaining	Total	Cumulative total
	Number	Number	Number	Number	Number
1880-1889.....	1	1	.....	2	2
1890-1899.....	1	1	.....	2	4
1900-1904.....	.....	1	.....	1	5
1905-1909.....	.....	1	1	2	7
1910-1914.....	.....	4	3	7	14
1915-1919.....	8	29	20	57	71
1920-1924.....	14	48	14	76	147
1925-1928.....	1	6	5	12	159
Total.....	25	91	43	159	159

Previous to 1916, cooperative fluid-milk marketing on a large scale had gained little permanent foothold. It had, however, laid a background and furnished a wealth of experience as a foundation upon which some of the later associations built. In the New York milk shed, for instance, several associations had been established and disappeared. Table 2 gives the names of a number of associations that were built up around different cities and were succeeded by others. In a few cases successors were hardly more than changes in names; in others they were new associations built on the ruins of the old. Often the names of leaders and enthusiastic supporters of cooperation will be found identified with every association formed in the shed. To these men who carried along experiences gained from association to association, or passed these results on to others, and enabled the present associations to develop on a firm foundation, belongs

much of the credit for the successful establishment of existing associations.

TABLE 2.—*Some of the present cooperative milk-marketing associations and those preceding them which furnished valuable cooperative experience*

Name of association	Date of organization	Principal market
Boston Milk Producers Union.....	1883	Boston.
Boston Cooperative Milk Producers Co.....	1904	Do.
New England Milk Producers' Association.....	1904	Do.
Do. ¹	1913	Do.
Do. ²	1917	Do.
Orange County Producers.....	1883	New York.
Five States Milk Producers Union.....	1889	Do.
Five States Milk Producers Association.....	1898	Do.
Cooperative Creameries Association.....	1903	Do.
Dairymen's League.....	1907	Do.
Dairymen's League Cooperative Association (Inc.).....	1919	Do.
Local associations.....	1883	Philadelphia.
Dairymen's Protective Association of Pennsylvania and New Jersey.....	1887	Do.
United Milk Producers Association.....	1887	Do.
Philadelphia Milk Shippers' Union.....	1896	Do.
Inter-State Milk Producers' Association.....	1916	Do.
United Milk Producers Association.....	1899	Baltimore.
Maryland State Dairymen's Association.....	1909	Do.
Do. ³	1918	Do.
Milk Producers Union.....	1889	Pittsburgh.
Milk Producers Association of Eastern Ohio and Western Pennsylvania.....	1894	Do.
Northeastern Ohio Milk Producers Association.....	1916	Do.
Dairymen's Cooperative Sales Co.....	1918	Do.
Milk Producers Union.....	1887	Cleveland.
Northern Ohio Milk Producers Association.....	1897	Do.
Ohio Farmers Cooperative Milk Co.....	1919	Do.
Ohio Farmers Cooperative Milk Association.....	1923	Do.
Central Producers Co.....	1916	Columbus.
Scioto Valley Cooperative Milk Producers' Association.....	1923	Do.
Queen City Milk Producers Association.....	1917	Cincinnati.
Tri-State Milk Marketing Association (Inc.).....	1923	Do.
Cooperative Pure Milk Association ⁴	1923	Do.
Milk Shippers Central Union.....	1887	Chicago.
Milk Shippers Association.....	1891	Do.
Milk Shippers Union.....	1897	Do.
Chicago Milk Producers Association.....	1909	Do.
Milk Producers Cooperative Marketing Co.....	1918	Do.
The Milk Producers Cooperative Marketing Co. ⁵	1922	Do.
Pure Milk Association.....	1924	Do.
Southern Illinois Milk Producers Association.....	1913	St. Louis.
Illinois-Missouri Cooperative Milk Producers Association.....	1921	Do.
Illinois-Missouri Dairy Co.....	1924	Do.
Illinois-Missouri Cooperative (Inc.).....	1925	Do.
St. Louis Pure Milk Producers' Association.....	1926	Do.
Do. ⁶	1928	Do.

¹ Reorganized in 1913.

² Reorganized in 1917.

³ Began functioning as a milk-marketing organization in 1918.

⁴ A change of name without reorganization.

⁵ Reorganized in 1928.

Some of these earlier organizations were bargaining associations, but more often they were of the marketing type. Among those producers who to-day have years of experience back of their organization are those in the Philadelphia and New York milk sheds. If the instilling of the spirit of cooperation into any group of agricultural producers is the result of a gradual process of education and experience, the milk producers of these sheds may consider themselves fortunate.

COOPERATIVES OF THE PHILADELPHIA MILK SHED

Cooperation in milk marketing in the Philadelphia milk shed probably began during the period from 1883 to 1885. Between 1885

and 1895, five cooperative associations were formed which were federated in one central sales organization known as the Dairymen's Protective Association of Pennsylvania and New Jersey. Three of these were known as the Milk Association of Pennsylvania, Schuylkill Valley Railroad and its Tributaries; the North Penn Dairymen's Protective Association; and the Pennsylvania Milk Producers Association. The names of the other associations are not now definitely known.

The Dairymen's Protective Association of Pennsylvania and New Jersey acted as a central sales organization and established a surplus by-product manufacturing plant which was operated during the latter part of the period. The central association encountered difficulties in prorating the cost of manufacturing the surplus to the individual organizations so loosely federated.

An organization known as the United Milk Producers Association was formed about 1887, but whether this was a separate organization or one of the five in the federation can not be definitely ascertained.

PHILADELPHIA MILK SHIPPERS' UNION

About 1896 the Philadelphia Milk Shippers' Union was organized. It was reorganized about 1901; locals were established, and the union became a collective bargaining association of the locals throughout the territory. In 1910 the name was changed to the Inter-State Milk Producers Association, but the territory included and the membership were too small to exert great influence on the market. The executive committee agreed on a monthly price and did what they could in conference with the distributors, to secure this price but, because of the small quantity of milk that they contracted, their bargaining had less effect than if a larger volume had been under the control of the association. The association had practically no dealings with the large distributors, who were inclined to ignore its existence. Those shipping through receiving stations were in no position to bargain, since they would probably lose their market to some one else.

Most of the bargaining was with the small distributors, much of it by individuals who tried to base their prices on that set by the association. Distributors bought from producers outside the association, and there was no uniform price throughout the territory. But the association kept alive the cooperative idea, represented the farmers in their relations with distributors, and, among other things, obtained legislation changing the standards of measurement for milk from dry to liquid measure.

With the increase in the general level of prices of most commodities, following the outbreak of the World War in Europe, the price of milk failed to keep pace. The efforts of willing distributors to increase the retail prices of milk, for practically a 15-year period before the war period, had always been met by a strong resistance on the part of the public, supported by the public press. Production costs mounted, and the purchasing power of milk became smaller and smaller. There had been practically no increase in milk prices. By 1916 there was widespread agitation because of these inequalities.

A special committee of the Pomona Granges of Chester and Delaware Counties was appointed; meetings were held; and the old producers' organization was expanded to take in new territory which formed the most important milk-shipping districts. Aided by the county agent of Chester County, the tentative reorganization plans were presented to the old executive committee September 27, 1916, and a month later they were adopted.

GOVERNORS' TRI-STATE MILK COMMISSION

Continued opposition of the public to increased prices and growing losses of the farmers caused the governors of the four States that supply Philadelphia to appoint, soon afterwards, the so-called governors' tri-State milk commission, of which Clyde L. King, of the University of Pennsylvania, was made chairman. The commission was charged with the investigation of the whole milk marketing situation so that farmers, distributors, and consumers might have an authentic, unbiased report on the status of milk production and marketing in the Philadelphia milk shed.

Immediate results of the investigation were such as to convince the distributors and consumers that, if they were to have an adequate milk supply, the price would have to be increased to a point that would enable the farmer to produce milk and remain in business. One of the longer-time effects was that the studies and work of men identified with the commission laid an economic foundation upon the basis of which the association has functioned, and provided a means by which differences could be adjusted and business cooperation could be accomplished between producers and distributors.

DEVELOPMENT IN THE NEW YORK MILK SHED

The background of experience for the dairymen of the New York milk shed dates from about the same time that cooperative marketing of milk began in Philadelphia. In fact, an attempt was made, in 1872 to form a fluid-milk marketing association of producers who shipped milk to New York. A 2-day meeting was held, but capital was lacking, and no one seemed willing and fitted to undertake the management, so the producers went home without any definite accomplishment.

DISTRIBUTORS FORM NEW YORK MILK EXCHANGE

The New York distributors formed a purchasing association in 1882, known as the New York Milk Exchange. It included no producers as members. Its function was to buy milk for the distributors, on a commission of about 3 cents per 100 pounds, and to fix the price paid to producers. Each distributor held stock in the exchange. About 1891, action was brought against the exchange on the ground that it was a combination to control prices, and it was finally dissolved in 1895. Upon its dissolution a similar organization composed largely of the membership of the previous exchange and known as the Consolidated Milk Exchange (Ltd.) was formed. Its members discussed the value instead of price of milk at their meetings and, on the basis of these discussions, prices were made by each distributor individually, and quotations were issued.

The second attempt of producers to get together was in Orange County, N. Y., in 1883. The fact that the distributors had organized the exchange made it more necessary that the producers have some organization to represent them in price negotiations, but the exchange refused to recognize the producers' association. A strike was called, which so decreased supplies that the exchange agreed to negotiations that resulted in a price agreement. Within two years, however, the distributors had widened their milk shed so that they were receiving milk from outside the Orange County territory. This essentially broke down any power exercised by the Orange County producers.

PRODUCERS OF FIVE STATES ORGANIZE

Producers then began to talk of bringing together all shippers, actual or potential, to the New York City market. They thought that by doing this they could regulate prices. Local groups were formed in New York, Connecticut, Massachusetts, New Jersey, and Pennsylvania. They thought of uniting all these locals into a central organization to be known as the Five States Milk Producers Union, which was to enter the distributing business and supply the consumers. The central organization appears never to have functioned as a marketing agency, but it did much to bring the local units together.

In 1898, the Five States Producers' Association succeeded the Five States Milk Producers Union. The formation of the Consolidated Milk Exchange and the activities of the distributors served as an incentive to hasten its formation. Many of the local associations built or bought creameries which were operated cooperatively. A large part of the market was organized locally, but the central organization again failed to function as a sales agency. The central organization appears to have existed until about 1907, although somewhat inactive, while the locals continued to function actively.

About 1903 the Orange County producers organized as the United Dairymen and attempted to sell its members' milk, but it was ignored by the New York dealers. A grange committee tried to negotiate with the distributors but without result.

DAIRYMEN'S LEAGUE FORMED

In 1907 the grange became active again in Orange County. Representatives from that and near-by counties met at Middleton; later in the year the Dairymen's League was formed and incorporated under the laws of New Jersey. The agreement upon organization was that the association should function when it had secured members owning 50,000 cows. It was not until 1910 that this goal was reached. The membership increased during the next few years, but the attempts on the part of the association to confer with distributors were unsuccessful.

By 1916, costs of production had risen so much more than the prices of milk that the members of the league were aroused enough to urge action on the part of their organization.

The executive committee established a price for October 1, 1916, but distributors refused to pay it. A strike, which lasted two weeks,

was called and was finally settled by distributors, agreeing to pay the price asked. Membership grew from 15,000 to 25,000 in a few months. From 1917 to 1919, prices were set by the United States Food Administration. When the Food Administration was disbanded, friction between producers and distributors developed again. The producers' asking price for January, 1919, was 40 cents per 100 pounds over the amount bid by the distributors. A strike lasting 18 days was won by the farmers. Membership had increased in 1919 to about 75,000.

The end of the World War, and its attendant shutting off of demand from European markets, left a large surplus of milk with no method of caring for it. It was decided that the league, which up to this time had been a bargaining association, must have facilities for handling the surplus. The Dairymen's League Cooperative Association (Inc.) was therefore organized, and began the operation of country plants in April, 1920. This association has continued its operation to the present time. Its status is discussed later in this bulletin.

DEVELOPMENT IN OTHER SECTIONS

The history of many other associations parallels, to a considerable degree, that of those in Philadelphia and New York.

Boston's first cooperative association was started about 1883, and was succeeded by others; the present New England Milk Producers Association was established in 1917.

Chicago and Cleveland had associations operating in 1887, Pittsburgh in 1889, and Baltimore in 1899. Most of these were weak and rather ineffective as marketing organizations, but served a useful purpose in providing the producers with experience along cooperative lines.

It is evident that the cooperative association was not an important factor in the marketing of fluid milk previous to the World War. But these experiences which schooled the dairymen in thinking and acting cooperatively, together with the unfavorable economic situation, and the Government's part in food control during the World War, were the major factors that contributed to the rise and development of the cooperative marketing of fluid milk.

In a great many cities, during the 10 years previous to 1916, there had been little change in retail prices of milk. The price for grade B milk on delivery routes in New York, prior to the fall of 1907, was 8 cents per quart. In Chicago it was 7 cents. In New York it did not exceed 9 cents, or in Chicago, 8 cents, at any time prior to 1916. (Fig. 1.) The consumers had been accustomed, for years, to paying a certain price for milk and felt that any increase was exorbitant. Efforts of producers to increase the price were always met with a strong resistance on the part of the public, supported by the public press.

Prices to producers under these circumstances were necessarily low, but as long as prices of other commodities remained low also returns were sufficient to keep plenty of dairymen in business. An examination of Figure 2 reveals how nearly a composite of the prices paid producers for milk in Boston, New York, and Pittsburgh followed those of other commodities, for the 20-year period 1908 to

1927. A study of other areas shows this price to be representative of other markets over any appreciable period of time. Taking the 5-year period 1910 to 1914 as the base for the all-commodity index number and for calculating relative prices of milk, the figure shows the deviations of the monthly relative price of milk above or below the monthly index number of all commodities.

For the period 1908 to 1912, prices of milk were intermittently higher and lower than the average price of all commodities, but on the whole for that period they averaged 5 points lower relatively than the average of all commodities. From the latter part of 1912 until near the end of 1915 they were almost invariably higher than the level of all commodities. Any prolonged period in which costs are higher than prices can not fail to bring about curtailment of supplies and dissatisfaction among producers. The year 1916 further showed a wide disparity between the prices of milk and of other commodi-

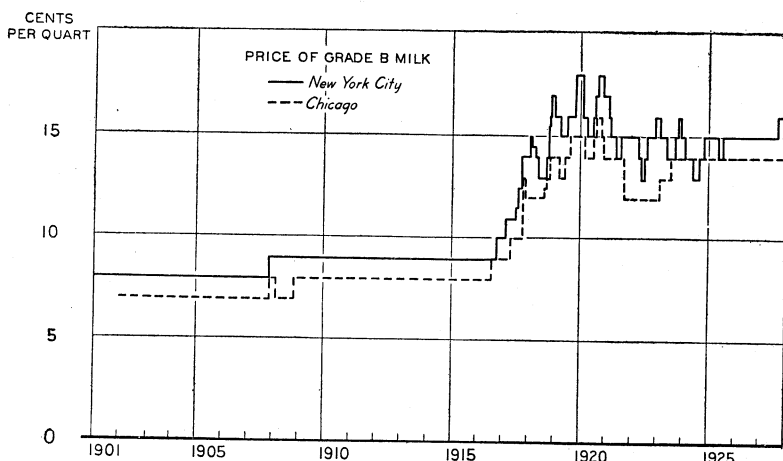


FIGURE 1.—AVERAGE MONTHLY PRICES OF MILK ON DELIVERY ROUTES IN NEW YORK CITY AND CHICAGO, 1901-1927

During the period from 1901 to 1907, there was little change in retail prices in either New York City or Chicago. Prices during the following 10-year periods were considerably higher and showed greater variation.

ties. Milk prices in the latter part of 1916 were more than 30 points lower than all commodities relative to the period 1910 to 1914, and they dropped still lower in the spring of 1917, with no relief in sight. The point was actually reached at which prices of milk had to go up or many farmers would necessarily stop producing.

The farmers naturally turned to any existing cooperative marketing associations to represent them in getting higher prices. Producers for the Chicago, New York, and Boston markets appear to have been among the earlier ones to take up the fight actively. The results of organized labor in securing higher wages served as an example of accomplishments from organization, and it is but natural that milk producers thought of the strike as a method of enforcing their demands. Local groups began to be organized, and old associations were revived. Especial interest in marketing fluid milk was shown around the large cities, and active membership in many associations increased rapidly.

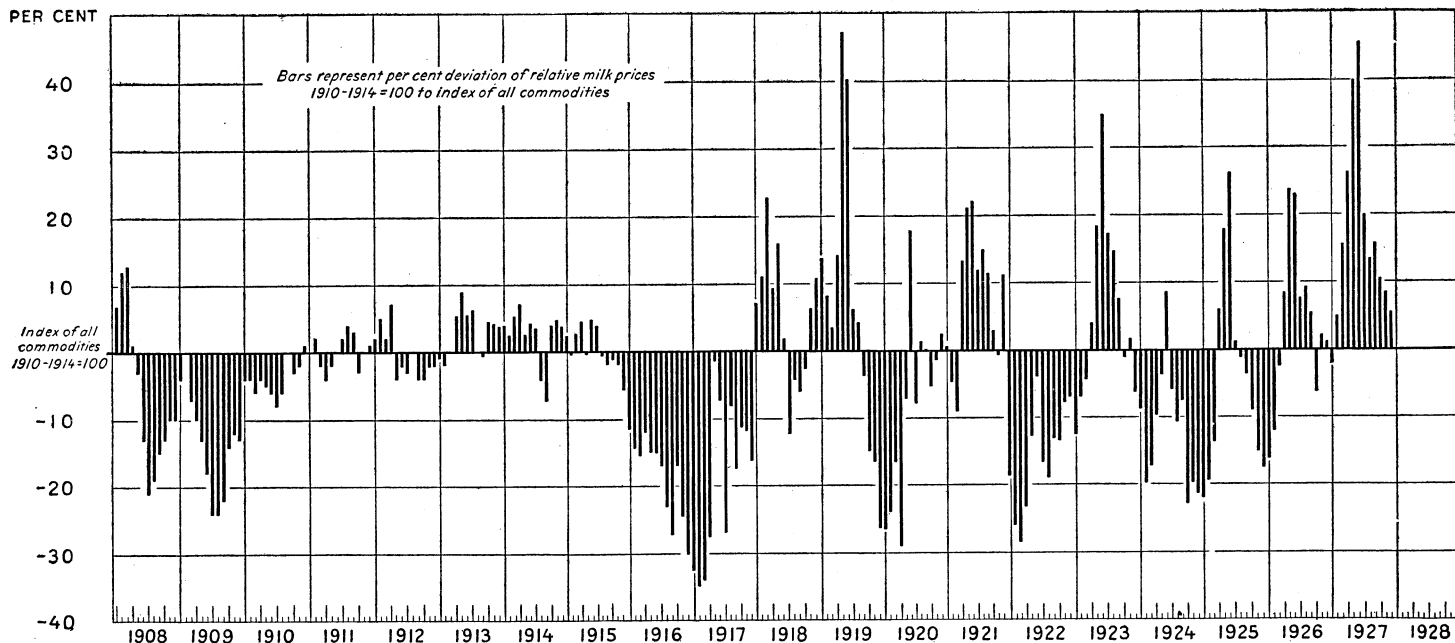


FIGURE 2.—RELATION OF AVERAGE PRICE PAID PRODUCERS FOR MILK IN BOSTON, NEW YORK, AND PITTSBURGH, TO INDEX OF ALL COMMODITIES, 1908-1927

The composite price paid to producers of milk in Boston, New York, and Pittsburgh during the period 1908-1915 followed closely the prices of other commodities. During 1916-17, milk prices were so much lower than the average of all commodities that dairying was relatively unprofitable.

CHICAGO MILK-PRODUCERS' STRIKE

The producers of the Chicago district, organized under the name Chicago Milk Producers Association, were the first to take up active opposition against the distributors in favor of higher prices.

In the spring of 1916 the producers asked \$1.55 per 100 pounds for 3.5 per cent milk. On April 1, 1916, there were about 13,000 producers supplying milk to Chicago, about 2,600 of whom were members of the Chicago Milk Producers Association. This association estimated that 52 per cent of the townships were about 70 per cent organized. Over 65 per cent of the farms were operated by tenants, and 56 per cent of the producers were foreign born.

The producers' asking price of \$1.55 per 100 pounds for 3.5 per cent milk was an increase over the price for the previous year. The distributors offered \$1.33½ per 100 pounds. The producers withheld the milk; in about a week the producers' price was granted, and the strike was ended.

The Chicago strike spread to southern Illinois, where a price of \$1.40 for 3.5 per cent milk in the St. Louis district was asked. The distributors fixed \$1.30 as their maximum. After a few weeks the strike was called off, although the producers' demands had not been met. This strike failed because these producers were unable to restrict the supply enough to enforce their demands. Many of the producers failed to hold their milk after a few days, and the distributors were able to procure an ample supply of milk in the condensery districts just outside the regular fluid-milk shed and some from greater distances.

OTHER STRIKES FOLLOW

In September, 1916, rumors of the success of the organized dairymen in other cities began to reach members of the Dairymen's League, and a leader of the Chicago dairymen was invited to New York State. He aided the league in arousing enthusiasm, and a price of \$2.05 per 100 pounds for 3 per cent milk was announced for October. On September 30 the league notified its members not to make deliveries unless notified to do so. A 14-day strike followed, during which milk was shipped from the Chicago, Indianapolis, Cleveland, Philadelphia, and Boston milk sheds and from points in Maine and Canada. After two months, distributors handling 65 per cent of the milk were reported to have met the league price; the other distributors gradually fell in line, and the strike was at an end.

In the Boston milk shed, a strike was called by the New England Milk Producers' Association on October 1, 1916; the association asked for a price of 50 cents per 8½-quart can. The strike lasted about 6 weeks before the distributors met the demands of the association.

A milk strike was ordered for October 20, 1916, in Pittsburgh, but was called off. On August 1, 1917, producers asked \$2.80 per 100 pounds for 3.5 per cent milk and 7.6 cents for each additional point of butterfat f. o. b. shipping point for all Ohio milk, while local producers asked \$3.48 per 100 pounds f. o. b. the city. The distributors offered \$2.60 per 100 pounds f. o. b. shipping point, with 4 cents for each point above 3 per cent and a discount of 2 cents for each point

below in the butterfat test. The strike lasted through August. Then the producers agreed to accept, for a limited period, \$2.60 for 3.5 per cent milk with a 5-cent differential for each point of variation in butterfat either up or down. The retail price was then increased to 13 cents per quart.

In the Cincinnati milk shed locals had been established, and men from these groups began meeting together by October, 1916. By January, 1917, they had come to an agreement that some central organization must be started if they were to obtain higher prices. On January 10, 1917, they asked all their members to withhold their milk. The city health department was not in sympathy with the strike and let down all bars as to requirements. Many distributors obtained milk from any possible source, maintained no butterfat standard, and employed powdered milk for making milk for distribution. When the strike came to an end, it had resulted in a heavy cost to both distributors and the association, but the men fighting for the establishment of a cooperative had been brought together. The distributors had not been forced to meet the demands of the producers, but they were thoroughly tired of the opposition and anxious that it should not be repeated.

When producers and distributors came together the following October the distributors agreed to prices asked by producers, and the leaders agreed to use their influence to prevent any further disturbance as long as the producers were treated fairly.

A second strike in the New York milk shed occurred in 1919 when the league prices were 40 cents over the prices offered by the distributors. The strike was won by the producers in 18 days, at which time the league membership was reported as 75,000, or about its maximum for all time up to the present.

Although the strikes which occurred from 1916 to 1920 were fairly successful in obtaining the demands of the producers, their effect was only temporary. They did, however, focus public attention on the question of the milk supplies of the cities and on the fact that the producer must, on the average, receive a fair return for his production. They also hastened the necessary increases in retail prices. They served to bring producers together and to strengthen the co-operative associations of farmers in fluid-milk areas. Their successful termination was in considerable part due to the fact that as prices of other commodities were rising, resistance on the part of the consumers to increases in prices of milk was less.

The only strike of significance in recent years was that of the Pure Milk Association of Chicago, which occurred in 1929. A fact-finding committee representing the public had investigated the situation and recommended an increase in milk prices to producers and, if necessary, to consumers. The large distributors had refused to recognize the producers' association in any way. The producers stated that their selling price for milk would be raised January 1, 1929, from \$2.50 to \$2.85 per 100 pounds for 3.5 per cent milk. The distributors posted signs at their plants that the price would be \$2.50. From about January 18, members of the association withheld their milk. An agreement was reached with the distributors on January 22 to submit the question to arbitration.

Clyde L. King, of Philadelphia, who was selected as arbitrator, placed the price at \$2.64 for the first three months of 1929 and, in addition, ruled that the distributors were to pay 1 cent per 100 pounds to the Pure Milk Association on all milk received, and were to refuse to receive milk from any new producers who were not members of the association. Indications are that, if the association is managed wisely, the results of this plan may be beneficial to both distributors and producers. One of the differences between this strike and those which occurred in Chicago and in other cities in previous years was the fact that the consumers here were in sympathy with the producers and favored an increase in prices.

INFLUENCE OF UNITED STATES FOOD ADMINISTRATION

The Federal Food Administration, which operated from 1917 to 1919, let it be known early that it preferred to deal with groups and not with individuals. Cooperative associations were the only representatives of groups of milk producers. The administration was anxious to keep everybody as well satisfied as possible and readily advised distributors to acquiesce in producers' demands for prices, when such demands were justified; and the distributors gave in rather than oppose the Food Administration. Some of the associations were aided considerably in establishing proper differentials between the primary and secondary markets by the fact that distributors in these towns obeyed the orders of the Food Administration. When the Federal Food Administration ceased to function, in 1919, a few distributors tried to regain their old-time position, but most of them accepted the new order of things which in most cases, was as profitable to them as the old. The action of the Food Administration had given the producers' cooperative organizations a foothold strong enough, in the majority of cases, to insure its permanent establishment.

LEGALITY OF ASSOCIATIONS QUESTIONED

Along with the increases in prices which came during the war period the right of the producers to get together for the purpose of naming a price or of agreeing with distributors as to the prices for a particular market was questioned in a number of instances. In 1917 a disagreement between the Milk Producers Association of Chicago and the distributors relative to prices brought in the Food Administration, which settled the dispute. The producers' association called a meeting with the intention of putting into effect the recommendations of the Food Administration. The State's attorney of Cook County, Ill., claimed that this meeting was in violation of the State antitrust act and filed suit to criminally prosecute the leaders of the association; eight directors were indicted. Arrangements were made for the prosecution to be delayed during the war, but in 1919 it was resumed, and the men were given a jury trial. The jurors were city men, most of them laboring men and consumers of milk. A verdict of "not guilty" was rendered, but the trial cost the farmers of the district an immense sum and was highly detrimental to the morale of the organization.

In 1917 the directors of the Ohio Farmers' Cooperative Milk Co., which supplied milk to Cleveland, Ohio, were suddenly arrested at night under charge of violating the Valentine Antitrust Act of Ohio. They were taken to the county jail of Cuyahoga County, and were denied the right of bail until 10 o'clock the next morning, when their friends obtained their release. A trial resulted in a verdict of not guilty.

The executive committee of the Twin City Milk Producers' Association in Minneapolis was indicted in the fall of 1917² on the grounds that they were attempting to increase and fix milk prices. After being continued for about two years the case was brought to trial September 15, 1919; the jury was selected and then dismissed while the attorneys for the accused men argued for two days that the case should not be brought to trial since there was really no charge against the men.

The case was dismissed by Judge Leary on September 19, 1919. In rendering the decision he said:

The corporation entered into no agreement with anybody else, any person or with any corporation of any kind. There is no evidence of that and no offer to prove that. If as a matter of fact it was alleged that these particular defendants had entered into a combination with the Clover Leaf or the Metropolitan Milk Co., and then proof should be offered it was the corporation and that the corporation controlled the milk and that the corporation fixed the price I think then the point might be, I am not so sure but what the indictment would be indefinite even then, but that would supply an element that is absolutely necessary; but it is not set forth in the form of the indictment and is not supported by any evidence in the case. What really appears here as near as I can see is simply this: There was a cooperative corporation formed, and these defendants were the officials, that this cooperative corporation fixed the price or did some act tending to fix the price of milk in the city of Minneapolis, and at the time had control of 50 per cent of the milk to be supplied here. Now that is about all there is in this claim from the evidence so far as I can see now. That may be a crime. I am not passing upon that. It is not charged at least that it is. And for these reasons I have indicated the court at this time sustains the objection.

Attempts at prosecution under other State and Federal statutes were also made. In New Orleans a small group of producers disagreed with the principal distributor of that city concerning the proportionate share which the producers and the distributor should take in a price cut. The producers held a meeting, and the Federal district attorney started a prosecution against them. Other associations came to their assistance, and the indictment was quashed.

THE CAPPER-VOLSTEAD ACT

These various prosecutions were a disturbing element in the progress of the fluid-milk cooperative associations. Most of the organizations do not follow State lines. They were, therefore, especially interested in obtaining a certain degree of exemption from the operation of the Federal antitrust acts. Such legislation has been accom-

² ANONYMOUS. CASE AGAINST T. C. M. P. A. EXECUTIVE COMMITTEE DISMISSED. Twin City Milk Producers Bul. 3 (10): 2. 1919.

plished through the passage of the Capper-Volstead Act,³ and today these cooperatives participate frequently in conferences and enter into agreements for which hardly a decade ago they would have been prosecuted. In spite of the fact that they were given this exemption, they have not unduly enhanced the price of their product to the consumer. To date not a single complaint has ever been filed.

PRESENT STATUS OF FLUID-MILK COOPERATIVES

In 1927, the 159 fluid-milk cooperative associations reporting to the Division of Cooperative Marketing are estimated to have marketed 11,000,000,000 pounds of milk, which is approximately 40 per cent of the milk marketed in the United States. This was sold for about \$325,000,000. Of this amount, bargaining associations received \$185,000,000 and operating associations \$140,000,000. This includes only milk marketed by producers. A quantity of milk approximately equal to that marketed is estimated to be consumed on farms and never enters the market.

These associations are confined largely to the eastern part of the United States and the northern cities of the Middle West and the Pacific coast. Little of the milk in the South is marketed cooperatively. The locations of the various associations are given in Figure 3. The active membership of these associations ranges from less than 100 to over 40,000.

The Dairymen's League Cooperative Association (Inc.) has slightly over 71,000 contracts on its records, but has only about 41,000 participating members; that is, shippers who actually sell milk through the league at some time during any year. The changes in number of contracts on record are shown in Table 3.

³ The Capper-Volstead Act became a law on February 18, 1922. This act of Congress was passed for the purpose of making it plain that producers are free to act together along normal business lines in the collective handling, processing, and marketing of their agricultural products, with respect to interstate or foreign commerce. Since the passage of the Capper-Volstead Act stock and nonstock associations of producers may be formed and operated without violating the Federal antitrust laws. In order for an association of producers to obtain the benefits of the Capper-Volstead Act, the association must meet the terms and conditions of that act. In order to come under the act, an association of producers must be operated for the mutual benefit of the members thereof as such producers. The association must not deal in the products of nonmembers to an amount greater in value than that handled by it for members. The dividends on the stock or membership capital in the association may not exceed 8 per cent a year unless each member of the association is restricted to one vote in the association. If the Secretary of Agriculture is of the opinion that an association has unduly enhanced the price of the product it is engaged in marketing, he may issue a complaint against the association, requiring it "to show cause why an order should not be made directing it to cease and desist from monopolization or restraint of trade." If an association fails to comply with an order issued by the Secretary of Agriculture against it, the order may be enforced by the Department of Justice in the proper Federal district court.

TABLE 3.—*Dairymen's League Cooperative Association (Inc.) contracts: Changes and number in force, 1921–1928*

Year beginning Apr. 1	Contracts				
	At begin- ning of year	Received during year	Total	Canceled	Total after can- cellation
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
1921	50,843	17,470	68,313	3,263	65,050
1922	65,050	9,837	74,887	10,636	64,251
1923	64,251	4,587	68,838	5,092	63,746
1924	63,746	5,116	68,862	4,227	64,635
1925	64,635	3,890	68,525	5,105	63,420
1926	63,420	5,079	68,499	2,116	66,383
1927	66,383	7,423	73,806	2,203	71,603
1928	71,603				

Compiled from annual reports of Dairymen's League Cooperative Association (Inc.) and appearing in the following publication: UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF AGRICULTURAL ECONOMICS. MORE MILK PRODUCERS IN DAIRYMEN'S LEAGUE. U. S. Dept. Agr., Bur. Agr. Econ. Agr. Coop. 6: 332. 1928.

¹ May 1, 1921.

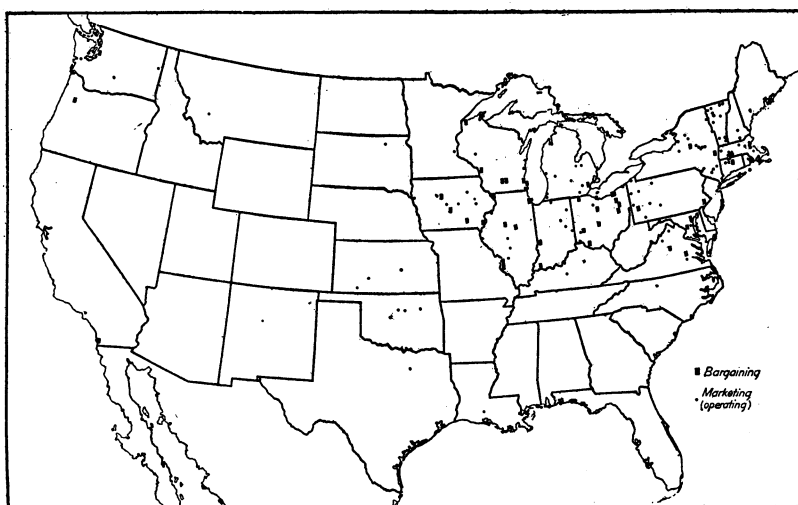


FIGURE 3.—LOCATION OF MILK-MARKETING ASSOCIATIONS, 1929

Milk-marketing associations have been organized mostly in the Eastern States and the northern cities of the Middle West and the Pacific coast. Little of the milk in the South is marketed cooperatively.

The number of contracts in force does not represent the number of producers actually delivering milk. Some of these may be starting out in milk production, or may be discontinuing it; or it may not be definitely known whether they are still in the business and have not canceled their contracts, which run continuously until canceled. For that reason the participating membership in any year runs far below the number of contracts in force. This fact has often led to confusion in interpreting the membership data published.

The New England Milk Producers' Association and the Inter-State Milk Producers' Association each report 20,000 or more members. The Dairymen's Cooperative Sales Co. of Pittsburgh and the Michi-

gan Milk Producers' Association of Detroit report 10,000 or more members. Forty associations reported a membership of 500 or more and 25 of 1,000 or more. The approximate membership by types of associations is shown in Table 4.

TABLE 4.—*Milk marketing associations: Type and membership, 1928*

Membership group	Associations				
	Retail distribution	Wholesale marketing	Bargaining	Total	Cumulative total
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Under 100.....	14	41	5	60	60
100-199.....	4	21	4	29	89
200-499.....	4	15	11	30	119
500-749.....		6	3	9	128
750-999.....	1	3	2	6	134
1,000-1,999.....		3	4	7	141
2,000-2,999.....			1	1	142
3,000-3,999.....	1		4	5	147
4,000-4,999.....			1	1	148
5,000-9,999.....	1	1	4	6	154
10,000 and over.....		1	4	5	159
Total.....	25	91	43	159	159

The territory over which one of these associations operates may extend 400 miles from the primary market, as in the case of the Dairymen's League Cooperative Association, (Inc.). It reaches out almost that distance in the Boston milk shed and a similar distance from the Philadelphia market. The approximate borders of the territories in which the various associations operate are shown in Figure 4. In some instances the territories of two large associations may overlap along the line where the borders of the sheds meet, and smaller cooperatives may be located within the territory from which a large-scale cooperative obtains its supply.

TYPES OF ASSOCIATIONS

The cooperative associations fall into two general classes, (1) bargaining associations, and (2) marketing or operating associations. The location of these associations, by types, is indicated in Figure 2. Many modifications and combinations of these are found in existing associations.

BARGAINING ASSOCIATIONS

The typical bargaining association is one which operates no facilities for the physical handling of milk. Originally its function was to act as a broker in arranging for the sale of the members' milk to the distributors. That still is its most important work, but it has taken on many other duties, so that it now performs a variety of economic services to producers and distributors. In addition to representing the producer in all price negotiations for the sale of his milk, it may guarantee the producer that he will receive payment for the milk in case the distributor fails, for any cause whatever, to make payment. This means that the association must have a sufficient reserve fund so that it can meet any possible loss from this direction.

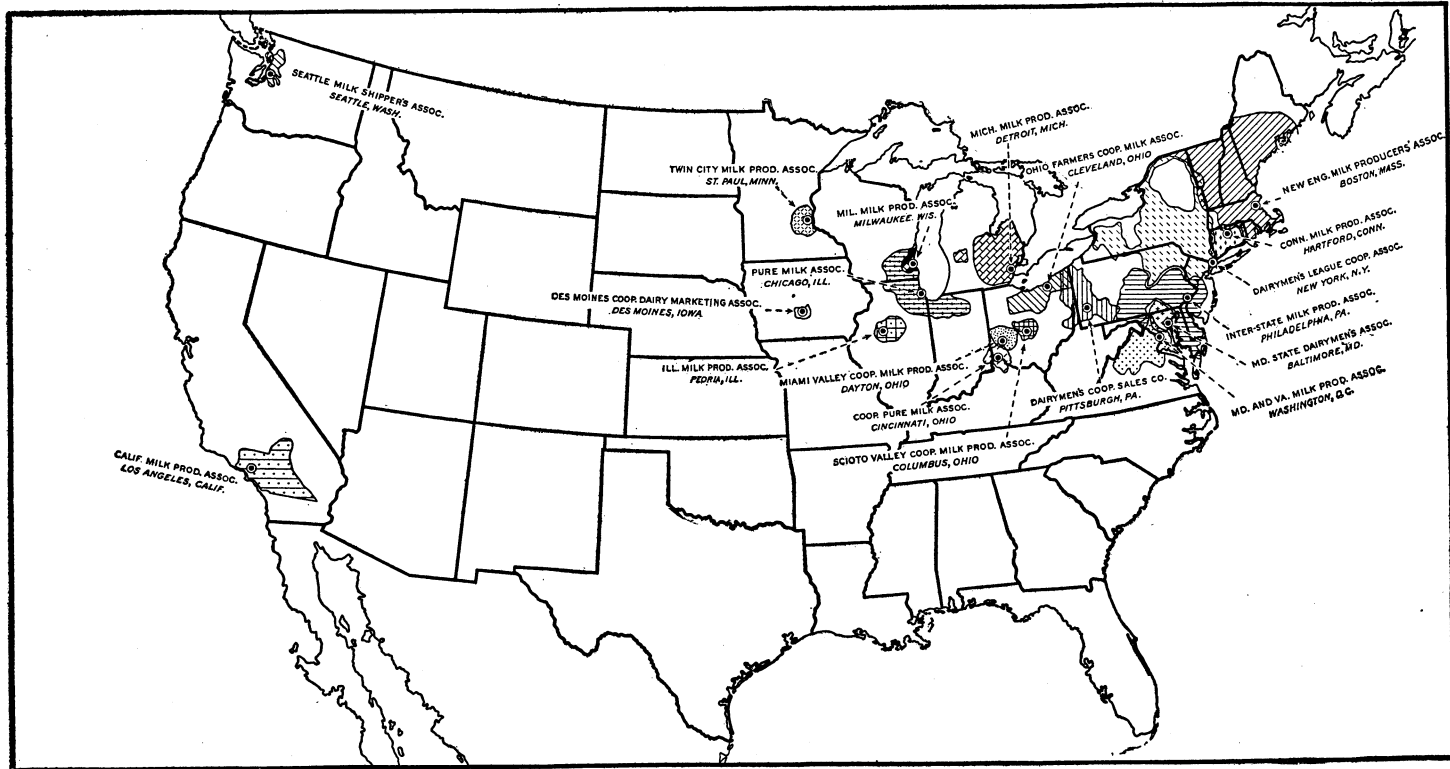


FIGURE 4.—OPERATING TERRITORIES OF PRINCIPAL MILK-MARKETING ASSOCIATIONS, 1929

Operating territory of large associations may sometimes overlap along the line where the borders of the sheds meet. Small cooperatives may be located within the territory of larger associations.

It also means that the association, if it must guarantee payment, will keep more carefully investigated the kind of credit risk and the financial condition of a particular distributor, or will require him to give a bond adequate to protect the association and its members.

Another function is the testing of milk for producers or, if the distributor does his own testing, the association may maintain check testers, and may also check weights. It may guarantee a market for unplaced milk; or for milk the usual distributors of which have refused to concede a price in line with the rest of the market. If producers are paid on the basis of the individual distributor's purchases and utilization, the association can adjust the supplies of the distributor more nearly to equalize the amount of surplus that each distributor must carry, by shifting producers from one distributor to another. It can regulate seasonal production through some plan of production control by means of which a producer who has a rather even supply of milk throughout the year will receive a premium above the average price, and the one whose production varies widely will be penalized. It may increase the consumption of milk through dairy-council work with schools and clubs and other forms of advertising. Field inspection and maintenance and improvement of quality through sanitary requirements and standards by inspection are other services that may be rendered. The association can also render a valuable service to producers by representing them publicly whenever occasion demands, such as in securing beneficial legislation, tariff adjustments, and more favorable transportation rates.

The association does not itself receive or actually handle the milk. It ordinarily does not pay the producer for his milk; the check is mailed directly by the distributor. The association may receive its income from an annual membership fee, but more often it comes from a service charge on the basis of the quantity of milk sold.

This type of association has the advantage that it can be started with a relatively small amount of capital and can be conducted for a small cost per unit of product sold. It has the disadvantage that, in case the distributors wish to ignore the association, it may not be able to bring any great degree of pressure to bear on them in securing desired adjustments in price or other matters. Through the payment for milk, the distributor has a direct contact with each member and therefore with a possible source of supply in case of difficulties with the association.

But the association may render such services in securing for the distributor an adequate supply of high-quality milk at all times that the distributor may be unwilling to dispense with the services of the association, and so may make concessions. Then too, a producer who has thus been brought in closer touch with his market is more likely to adjust his production so that he can secure a higher average price; this in turn aids the distributor since his daily supplies will more nearly correspond with sales. The association also renders the distributor a service in teaching the public that it must expect to pay a reasonable price for milk and to give the distributor an adequate margin if it is to secure a good quality of milk at a reasonable price. For these services the distributors should be willing to pay a considerable sum as long as they are allowed an adequate margin.

Many of the fluid-milk associations are of the bargaining type, as those supplying Boston, Hartford, and other Connecticut cities, Philadelphia, Pittsburgh, Baltimore, and Washington. This type tends to be adapted to milk sheds located in a more or less deficit area. Its effectiveness may be considerably increased if it has reserve funds large enough to enable it to change to an operating or marketing association within a short period of time.

OPERATING OR MARKETING ASSOCIATIONS

The terms "operating" or "marketing" associations are applied to all associations that actually handle all or a part of the milk and operate physical handling facilities. They may perform all the functions of bargaining associations, as well as handle milk and manufacture and sell milk products.

These associations might be further subdivided into (1) those that own all country receiving facilities and sell at wholesale only, manufacturing the surplus, if they are so equipped, into whatever products will give them the greatest return; (2) those that own city and country facilities and sell at retail as well as wholesale; and (3) those that own only a part of the facilities for handling the product and sell principally at wholesale.

Associations of the operating type are found in such cities as New York, Cleveland, Cincinnati, St. Paul, Minneapolis, and Los Angeles.

Such an association, by operating its plants, may be able to take off the market at times when supplies are in excess of fluid consumption a sufficient quantity of milk so that prices will not be unduly depressed or so that distributors will not have an instrument in the form of a surplus by which they are able to depress prices below what the supply and demand situation justifies.

Since the association actually makes the payments to the producers a contact is maintained constantly between the members and their association, and the members can be kept fully informed as to the aims and accomplishments of the association. As the distributors may not operate the country plant they do not have country contacts and are more dependent upon the association for milk supplies.

The greatest disadvantage of the marketing association has been that as it takes the producer into business, the one without necessary skillful business management in the sale and manufacture of dairy products may suffer. Then this association may require a large amount of capital, a considerable portion of which must be raised before the association can begin operation, and this may tend to keep the membership much smaller than it would otherwise be.

RETAILING REQUIRES CAPITAL AND EXPERT MANAGEMENT

It is in the retail milk business that capital requirements are especially high relative to the volume of milk. The retailing of milk by cooperative associations has not been as successful in the United States as has wholesale milk marketing. The problem of a sufficient volume of business to make possible low operating costs per unit of product plays an important part. In selling milk at wholesale, by merely deciding that they will market their milk

through the cooperative, the producers have the means whereby they may be able to increase the volume of product for sale through the cooperative until it is larger than that handled by any competitor. With this large volume, the costs of operation may compare favorably with the most efficient wholesale operations by competitors and may be lower than many.

In establishing a retail business the producer must go out and secure business on the same basis as competitors. The experience of the cooperatives in retailing milk seems to indicate that many of them have not been able to operate as efficiently during the first five years as do many privately owned distributing companies, handling an equal volume, that have been in the business for years.

If the cooperative can afford to buy and finance an established and successful distributing business and can retain a management friendly to the association it is likely that many difficulties will be avoided.

There has been a tendency for cooperatives to buy the business of a distributor who is failing or has not been successful. The business is frequently purchased upon the basis of its assets rather than upon its earnings. Frequently the result is a burden which none of their competitors would consider.

The capital requirements for a retail milk business are high. Unless the cooperative has accumulated a substantial reserve that may be used for this purpose the financing may prove burdensome.

A cooperative that is retailing milk at the same time that it is selling milk at wholesale to other distributors who are its competitors, is in a difficult position. But if the cooperative is a retailer only, it can expect to get only a part of the business and therefore can accommodate only a proportionate number of producers. Some cooperatives have attempted to solve the wholesale and retail problem by having a subsidiary organization in the distribution business while the principal organization sold milk to the subsidiary as well as to other distributors. If the same group of men control and manage both the principal association and the subsidiary it is likely to be much like one association. The retail end of the business is interested in obtaining milk as cheaply as possible whereas the producers who wholesale it to the retail distributors want as high a price as possible. For that reason it is difficult to bring the interests of the two together.

Few of the fluid-milk cooperatives are retailing in large cities. Those operating in Cincinnati, Los Angeles, and St. Louis have developed a very substantial business in each city. On March 1, 1929, the Ohio Farmers' Milk Association entered the retail field in Cleveland; at this writing it is too early to make any prediction as to the character of changes that will be brought about in their business from this move. Most of the other associations that retail milk are confined to fairly small towns.

ORGANIZATION OF MILK-MARKETING ASSOCIATIONS

It is desirable to have the best set-up possible, on the basis of the experience of successful cooperatives, but the actual success of the venture often depends to only a limited extent upon this organization. Many of those that are now operating successfully say that

a change in their set-up would be desirable, but as long as the present one does not seriously handicap them they think it unwise to make any change.

Both the bargaining and operating fluid-milk associations are of the type that have central control. Most of the larger associations have some sort of local unit (which may or may not have a legal status) to facilitate the dissemination of information relative to the plans, progress, and policies of operation of the association, and in some cases to serve as a means of voting in the elections of the directorate. The contract for the sale of milk, however, is always between the individual and the central association that sells his milk, and with which he must deal in making any adjustments.

The control of the association is ordinarily vested in a directorate of from 5 to 25, apportioned roughly on the basis of production, though there are a number of variations. If the directorate is not small, an executive committee usually functions between meetings of the board. In some instances this committee assumes the active management of the business of the association; in others a manager or manager-secretary, who is usually not a director or officer of the association, may be employed.

POOLING PRACTICES

The operations of practically every cooperative fluid-milk association involve pooling in some form. It may be the pooling of the returns of all members or of the members shipping to a single distributor or it may be a pooling of expenses only. The difficult problems are chiefly in connection with the pooling of returns.

In many of the associations the problem of a large section is involved. The borders of the milk shed must be determined so that all localities that naturally come into competition for the fluid-milk market will be included. If more distant localities, that are not economically competitors with those closer in for a given market, are brought into the pool the total supply is increased and prices to many of those participating are lower than they otherwise would be. If too small a district is included, unless the cooperative possesses adequate machinery and is so organized that it can buy milk outside the regular milk shed to supply distributors whenever necessary, distributors are likely to be short of milk at times and to go outside the shed to obtain it. When this supply outside the shed once gains access to the market it frequently can not easily be prevented from continuing, although it was needed only temporarily. The final result is an oversupply, except during the low-production periods, and a lower average price to the producers.

With the extremes of the shed defined, the fluid-milk problem involves the question of whether the shed is to be divided into a number of pools related to secondary markets as well as to the primary market, or whether the entire section shall be included in a single pool. Differentials to take care of differences in transportation costs and butterfat content have been generally recognized as essential. The question of proper differentials to care for inherent economic advantages possessed by producers located near a primary or principal market, or near a secondary market, is beginning to be

recognized by cooperative associations as important; that is, the producer located near a market has an economic advantage other than differences in transportation costs. He can more easily make contacts with distributors. Generally speaking, he has usually adjusted his production to the market demands, and has less seasonal variation in supply. The smaller distributors, especially, are willing to pay him a premium for his milk and can afford to do so since the supply may cost them less in the end. These factors enable him to secure a price which will keep him in business when prices are too low to cover the costs of the more distant producer.

If the association has some plan of production control or gives premiums for even production, the near-by producer's disadvantage from this source may be removed. His ease of making contact with buyers may still enable him to make a more profitable bargain than participation in a pool with distant producers. If the association does not recognize these factors in a way that compensates him for his natural advantages, he is likely to withdraw at any time, and probably within a few years.

If more than one pool by areas is made within the shed and milk is shipped from these pools into the primary market only as needed, its sale price is likely to be the same as for milk produced near the primary market. For the portion sold for fluid consumption in the secondary market the price should be less unless the farmer is located in a deficit locality. If the secondary market is located in a locality of considerable surplus, the differential between the price of fluid milk that enters into that secondary pool and of that entering the primary one is approximately the primary market price minus the cost of transportation.

FINANCING MILK COOPERATIVES

The operating type of fluid-milk association requires a considerable amount of initial capital for plants and equipment, which must be retained in these fixed assets. If it is to enter the retail-distribution field, the capital must be still greater. A number of the managers of cooperative associations have estimated that, if an association owns its plants and operates on 15 to 20 retail routes in a small city, the capital requirements will be from \$9 to \$10 per quart of business daily.

Funds must also be provided to take care of normal growth in the business and to provide for any changes in its character which make additional investments necessary.

The problem of working capital is not so great, because of the steady flow of the product to market and its immediate sale to distributors. The requirements for current financing are different from those of some annual commodity, as cotton or wheat. If the proceeds of sales for any month are retained until the 15th to 25th of the month following, collections from distributors can usually be made before the producers' payments are due.

The bargaining type of association requires only funds enough to pay its employees; these funds are usually derived from a service charge on the milk sold.

The securing of adequate capital within a short period of time has been one of the difficulties. The methods by which the associations

have been financed have varied, in part at least, according to the amount of capital required. The bargaining type of association, ordinarily requiring only a small amount of initial capital, usually obtains its original funds through the charging of a membership fee ranging in most instances from \$1 to \$5, paid only once. The plan of having each member sign a note (the amount based on his number of cows) to be used with the notes of other members as collateral for loans if necessary, has been employed by some associations to provide a potential reserve for working capital. Other associations have been organized as stock corporations with the subscription to stock on the basis of something like one share for each 10 cows as a requisite to membership.

A par value of \$2.50 per share, with fractional shares if the member has less than 10 cows, was used by some of the older associations established before suitable cooperative laws were enacted, under which they could incorporate as a cooperative. Since the associations intend to make no profits and expect to pay no dividends, the purchase of shares of stock is comparable to an initial membership fee. In case it is dissolved, the association is obligated to the members for the amount of the stock.

This plan seems to have been advantageous in that the association was more likely to accumulate a reserve equal to the capital stock outstanding than to set aside such a reserve if it charged only a membership fee in the first place. With the increasing trend of cooperatives toward establishing larger reserves, this will probably not be the case in future.

SOURCES OF CAPITAL FOR CURRENT OPERATING EXPENSES

After the initial capital has been acquired, income for current expenses must be obtained. Charging of an annual membership fee, based on number of cows, was one of the first methods. On account of the extra cost and trouble involved in collection of funds, it is not in general use to-day. The officers of a few associations, however, believing that it gives the association an additional benefit to have an annual contact with the member, have retained the plan.

SERVICE CHARGES SUPPLY CAPITAL

The method in most general use is the deduction of a service charge on all sales of milk through the association. For successful collection, it is almost essential that the charge be deducted by the distributor, if he pays the producer, and paid over to the association. Such a procedure is to the association similar to the "check-off" of the labor unions. It not only secures the charges due but establishes a degree of business cooperation between the producers' association and the distributors which might not otherwise exist.

The charge varies somewhat in proportion to the services performed and to the success of the association in marketing. The minimum charge is one-half cent per 100 pounds and the maximum about 11½ cents. In the latter case 80 per cent of the total charge is set aside as a contingency reserve to insure all producers against any losses from failure of distributors to pay for milk purchased, and against changing market conditions. It is contemplated that at least

a large part of the contribution to this reserve will be returned without interest. About 40 per cent of the associations are receiving a charge of 3 cents per 100 pounds; 10 per cent charge a greater amount; and 50 per cent less than that amount. From the associations' experiences it does not seem that they can be expected to operate on less than 3 cents per 100 pounds and give adequate service. In the few cases in which expenses are met by an annual per-cow charge, this ranges from 30 cents to \$1 a cow per year.

There is a tendency for new associations to increase the services to the producer and to make a higher charge, and some of the older associations are increasing the amount charged.

In no case does the charge of 3 cents or less provide for a contingency reserve or a sinking fund for expansion. It does include funds paid by the associations which participate in dairy-council activities toward quality improvement and increase of consumption of milk. In most cases the associations' contribution for this work is augmented by an equal contribution from the distributors, but as this practically increases the cost of milk to distributors it is probable that their buying price is slightly lower because of it. Thus most of the cost is shifted to the producer which is, in effect, the same as an increased charge.

If the general price level remains somewhat as it is, the trend toward higher charges in new and old associations will probably increase the charge to 5 cents within a few years. This will not be excessive, and should enable the association to set aside some reserves, as well as render greater service to producers and distributors. Leaders in the most successful associations believe that practically as many members will pay a charge of 5 cents as will pay 3 cents or less. They believe that the increased income may render the association so much stronger, through its increased service and bargaining power that it may be better able to obtain equitable returns for its product.

Charges for the sale of milk by bargaining associations are now almost always made on the physical-unit basis rather than on value. Originally many associations made charges on a value basis, but most of them have changed to a fixed charge per 100 pounds or per gallon. Deduction on the physical-unit basis tends to make those who produce a large quantity of milk during the summer months when prices are low, and a small quantity in the winter season when prices are high, pay a relatively larger amount to the association in proportion to their returns than do the men who have a more even production. A payment on the value basis makes the producer with the more constant production pay more. Inasmuch as an even production throughout the year is desirable and that deductions on the value basis tend to be against quality improvement which is reflected in price, the physical-unit basis appears to be the more equitable from the standpoint of a permanent policy for the association.

The marketing associations that operate and, in most cases, own facilities for actually handling milk require much larger amounts of capital, not only for current needs but for fixed investment in buildings and equipment than does the bargaining type of association. The initial requirements may be fairly large even if the association begins on a moderate scale.

CAPITAL STOCK FREQUENTLY USED

Sale of stock has been one method of raising the capital. Purchase of stock may be made a condition of membership and allotments of stock made on the basis of the number of cows in each producer's herd; that is, the producer may be required to subscribe for stock to the amount of from \$10 to \$20 per cow. For the small association stock may be sold on voluntary basis without regard to size of herd or production. The voting power and dividends are likely to be limited. The sale of stock may be limited to members only; but if there is difficulty in securing adequate finances the small cooperative may have to sell a part of the stock to business men or those interested in furthering the enterprise. If a large proportion has to be taken by such a group, producers may lack confidence in the enterprise and may not join in numbers large enough to make the project a success. Then, too, it may place the control in the hands of stockholders who are neither active members nor patrons. To prevent control by nonmembers, some associations have been organized as nonstock associations with a subsidiary stock association, the membership in the two being identical. Nonvoting stock is available to nonmembers, and the voting stock is under the control of members.

REVOLVING-FUND PLAN

Many associations are organized without capital stock. The "revolving-fund" plan, known also as the "certificate-of-indebtedness" plan, and probably introduced to the cooperatives by the United States Department of Agriculture, has frequently been employed in the nonstock fluid-milk associations. The initial capital is usually obtained by a cash loan, or by members giving individual notes payable on call or a short specified time thereafter. This payment in cash or notes is frequently based on the size of the member's herd. For the loan the association ordinarily issues an interest-bearing certificate of indebtedness payable at the end of some specified period of time, ranging usually in different associations from 3 to 10 years.

Some associations have provided for an amortization, the first payment of one-fifth of the amount to be made at the end of the sixth year, and a similar amount each year thereafter until the end of the tenth year, when payment will be completed. The only advantage of such a partial-payment plan is that the loan is in effect for seven and one-half years, and producers who begin to get some return on loans at the end of six years may be better satisfied than if it were a straight seven and one-half year loan.

After the initial capital is obtained, the association makes a deduction each month of whatever amount it thinks reasonable and necessary, and similar certificates are issued once a year or more often for these deductions. Associations have found it desirable to issue certificates in such manner that they can be called at any time or after a given time, at either par or a premium, so that if their capital requirements decrease they can be assured of a means of adjustment.

Since it is preferable that certificates be held by their original owners, the provision making them callable does not make them undesirable from the standpoint of these original holders. The

practice of issuing common stock for deductions for capital purposes is sometimes employed.

The revolving-fund plan is adapted to maintaining the capital of fluid-milk cooperatives as long as the character of the business remains the same, and there is no great decrease in volume of business during the life of the certificate of indebtedness if that plan is followed. It may not provide enough funds if the type of business is changed to one which requires a greater amount of capital (as from a wholesale bulk to a wholesale bottled or a retail business), or to a type of manufacturing which requires large equipment investments. Funds for an expansion that involves any appreciable change in the character of the business and, in some instances, funds to take care of a normal increase in business must be obtained in some other way. At present there is no credit agency to make loans of this type.

Some of the cooperatives have resorted to lengthening the term in which deductions are retained; that is, the association may have been issuing to the producer a certificate of indebtedness for the capital deductions made from his milk checks, payable in five years. It may seem that eventually it will need more capital for expansion and so may lengthen the term of the certificates to six or seven years. This method requires that the needs of the association be anticipated far in advance; it does not meet requirements for immediate capital. If, instead of certificates of indebtedness, common stock is issued, or if the deduction is retained and each member's account credited with his proportionate part of the fund, the calling of stock or paying of refunds may be passed for a year to secure a certain amount of capital. But such procedure tends to destroy the confidence of the membership and may cause more harm than benefit.

If the volume of business handled by the association decreases to any great extent during the term for which the certificates are issued, and the money from these deductions has been invested in fixed assets, there may be difficulty in meeting the payments unless rather large deductions are made, in which case a more rapid decline in volume of business is usually brought about. When changes in the business are gradual, these increases or decreases in requirements can be well taken care of under the plan. The callable feature should be incorporated in the certificates so that the amount of any maturity may be lessened whenever funds are available.

The plan is defective from the standpoint of satisfying the producer. Few associations have reached a point in stability at which the members have full confidence in the value of its securities. Moreover the members do not feel that they wish to act as the banker for the association, therefore they are not likely to be enthusiastic about repeated deductions from the milk checks. If the competitors of the association meet or exceed the prices paid by it, the association will lose some of its members, and such decreases in membership and attending volume of business are likely to make further deductions necessary.

If the members are sufficiently interested in the business to purchase its stock, financing by the direct sale of stock may place the cooperative association on a more stable basis with respect to its financing than would a revolving fund plan. Both plans have been

successfully employed. The circumstances surrounding each case should determine which plan is preferable.

ADEQUATE RESERVES NEEDED

A phase of the financial policy that has been somewhat neglected in many fluid-milk associations is the accumulation of adequate reserves. The wisely managed cooperative will adjust its business operations and provide a means of financing to meet unforeseen difficulties. The anticipation of market difficulties and unforeseen expenses is good business foresight. Establishment of a substantial reserve, held in a form that makes it quickly available, is one of the most important steps in developing a sound financial policy.

Those associations that have any appreciable investment in fixed assets have followed conservative accounting practice in setting up sufficient reserves to care for needs that can be well anticipated, but the importance of adequate contingency reserves is becoming more apparent to the cooperatives. A contingency reserve is designed to meet the events that can not be forecast. In many respects it corresponds to the surplus of the usual corporation. Either the cooperative or the private business may operate for a long period without extraordinary financial demands. When such funds are required it is frequently at a time when it is most difficult for the association to obtain credit. Some provision for supplying funds in an emergency is even more necessary for a cooperative than for the ordinary corporate enterprise.

Because of the nature of the organization of a cooperative and its fundamental no-profit principle, it can not accumulate a surplus from earnings as can the commercial stock corporation. The opportune time for the corporation to set aside contingency reserves is whenever its net earnings are large. These increased earnings may be due to a particularly favorable demand for its product, to increase in production efficiency, or to unusually favorable purchase of raw materials. The cooperative is not interested in purchasing raw material cheaply from its members. Its usual method of reserve accumulation is to make a deduction from each sale and thus gradually build up a surplus fund. The deductions made from each individual should be recorded, and after the fund has become adequate for the purpose intended deductions may still be made and the earlier contributors reimbursed for their proportion of the original contribution which still remains.

The fund is a reserve for extraordinary occasions whenever they occur. No interest is paid the producer on his share in the fund; he should be willing to consider his interest as the cost for market insurance.

The operating association that owns and operates plants and actually handles milk must establish its ordinary reserves to care for anticipated expenses. Because of its ownership of physical assets, some definite method of financing to secure funds for capital purposes has been necessary. For that reason, and because its physical assets give it a certain credit standing, it has been in a somewhat better position to raise funds quickly than has the bargaining association, but it would be in a much stronger position if it had an ample contingency reserve.

A large contingency reserve is particularly important in the bargaining type of association. One of the fundamental weaknesses of such a cooperative is its lack of ability to impress on those with whom it deals that it has essential services for sale. If the buyers do not care to consider its terms of sale, the cooperative is not in a position to act independently of the buying group, unless it has sufficient financial backing to take whatever course it deems wise.

The Maryland State Dairymen's Association has accumulated a contingency fund amounting to over half a million dollars. The Connecticut Milk Producers' Association, the New England Milk Producers' Association, and the Maryland-Virginia Milk Producers' Association are among those that have begun to accumulate such a fund; others will no doubt follow.

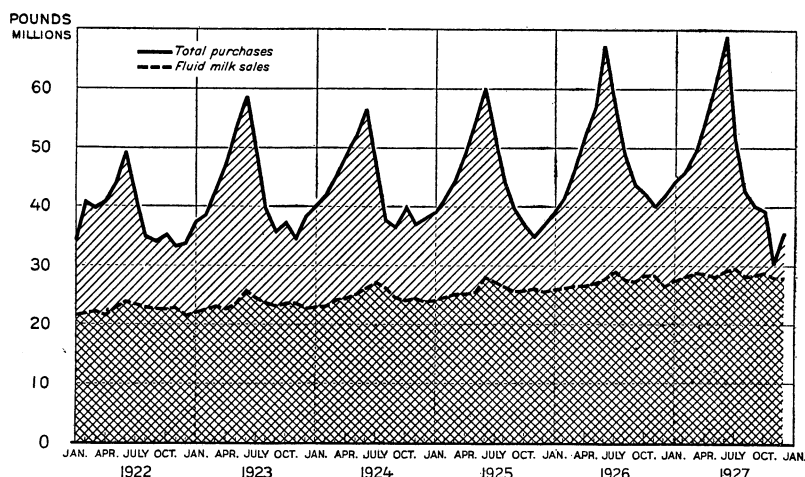


FIGURE 5.—VOLUME OF MONTHLY PURCHASES OF ALL MILK AND SALES OF FLUID MILK BY FIVE LARGE BOSTON DISTRIBUTORS, 1922-1927

Seasonal variation in production of shippers who shipped to these distributors may be taken as typical of many large milk sheds where no control plan has been in effect.

SEASONAL VARIATION AND PRODUCTION CONTROL PLANS

Sales of fluid milk are influenced by such factors as changes in temperature, the day of the week, holidays, and vacations. These factors affect sales at retail and wholesale, sales of quarts or pints, and various grades of milk, in different ways.⁴ Sales, however, are relatively stable from month to month; the total variation from the peak to the low point of the year usually does not exceed 10 per cent. Production varies much more widely. In some milk sheds the variation may reach 75 per cent or more; in others, it may not exceed 25 per cent. Figure 5 shows the receipts and sales of fluid milk of five large Boston distributors from 1922 to 1927. The milk came from all parts of New England. The seasonal variation in production of those who shipped to these distributors may

⁴ For an analysis of these factors see the following publication: ROSS, H. A. SOME FACTORS AFFECTING THE DEMAND FOR MILK AND CREAM IN THE METROPOLITAN AREA OF NEW YORK. U. S. Dept. Agr. Tech. Bul. 73, 68 p., illus. 1928.

be taken as typical, not only of New England but of many other large milk sheds in which no control plan has been in effect.

Variation in production in the case of many individual shippers reaches a still greater extreme. Dairies that have been producing milk for the fluid market for a number of years show, in most cases, far less seasonal variation than those that have been producing for a short period. As the distance from market increases, seasonal variation tends to increase, for the time when the more distant producer was selling his output for butter or cheese is not far away. High production in summer and low production in winter was not undesirable for manufactured products; in some cases it was more desirable than a stable production. Moreover, this may have meant lower production costs if a large proportion of the producers' land was more suitable for pasture than for crops.

The type of distributor and the market outlet are other factors that affect seasonal production of milk. Smaller distributors who have practically no outlet for surplus can not profitably take milk from producers who have highly seasonal production. Producers who retail their own milk usually manage to have a fairly even supply. The large distributor who has facilities for manufacturing may wish to receive a large surplus and may do little to discourage variation. The peak of production is usually reached either in May or June. The occurrence of the low point varies more widely. It is found in August, September, and October, but November is the usual month.

Production in the county of least variation in Vermont is of interest. In the month when production was highest, it was 157 per cent of what it was in the month of lowest production.⁵ For the county of greatest variation, production in the peak month was 257 per cent of that in the month of lowest production. Similar figures from Maine were 145 and 200 per cent, respectively, and from New Hampshire 125 and 226 per cent, respectively. The production of individual dairies in these counties varied even more. In each case there is a tendency for the nearest counties to have the least variations and for variation to increase with distance. Franklin County, Vt., and Coos County, N. H., which are on the Canadian border, show the largest variation. Thirteen of the fourteen counties of Vermont reached the peak of production in June; the fourteenth in May. Five of the counties reached the low point in September, six in November, and three in December.

In New Hampshire, the peak of production occurred in June in 8 counties, in May in 1 county, and in September in 1 county. The low point occurred in March in 8 counties, in November in 1, and in December in 1.

In Maine the month of high production was June. The month of low production was September in 3 counties, October in 8 counties, November in 2 counties, and December in 1 county.

The greater part of the territory of the New England Milk Producers' Association has turned more recently from butter and cheese production than has any large part of the territory in any other eastern milk shed. The degree of seasonal variation is therefore

⁵ Data compiled, for 1925, by the research department of the New England Milk Producers' Association.

probably as great or greater than in any other eastern milk shed. Supplies have usually been ample so far, so that a seasonal shortage has not been a problem. The producers' principal concern is how to reduce the surplus during the summer and thus obtain higher prices.

Over the entire period the New England Milk Producers' Association has shown the greatest range of variation with the Twin City Milk Producers Association second. The variation has tended to increase in both associations. Neither has attempted any plan of greater uniformity of production throughout the year. The Inter-State Milk Producers' Association, which has had such a plan in operation during that period, had a seasonal variation in 1921 of practically the same amount as the other associations, but since that time has shown far less.

Certain of the cooperative fluid-milk marketing associations have been pioneers in the field of controlling production of an agricultural commodity. Some of the plans make no attempt to control total production but aim to control only seasonal variations. They may be considered plans for equalizing production throughout the year. Production is brought more nearly into line with consumption requirements, and a higher proportion of the product is sold as fluid milk, which brings a higher return to the producer.

In New York State, which is slightly further removed from the butter and cheese period, not only has there been a problem of producing less summer milk in order to secure better prices, but for the last two years the market has been bordering on, and at times there has actually existed, a shortage of milk that might be used for fluid purposes. The producers will soon have to change their seasonal production, or more territory must be admitted under New York City inspection, to supply the city's requirements at reasonable prices.

Production of milk in sheds that are situated in butter-producing areas (as the one in which is located the Twin City Milk Producers Association of St. Paul and Minneapolis) follows in large part the same seasonal variation as the production of milk for butter. Figure 6 shows the variation in seasonal production in the Twin City Milk Producers Association, the New England Milk Producers' Association, and the Inter-State Milk Producers' Association from 1921 to 1927. The variation each month is expressed as a percentage of the annual average production, correction being made for trend.

THE BASIC SURPLUS PLAN

The plan for adjusting production that probably has been given the most exhaustive test is the so-called "basic surplus" or "basic rating" plan. Under this plan the individual producer is assigned a definite section of the fluid-milk market, based usually on his production during the period of the year when supply and demand most nearly balance. Any production above that quantity is paid for at lower prices. Apparently this scheme was first used by the Maryland State Dairymen's Association, of Baltimore, about 1918. Late the next year it was employed by the Inter-State Milk Producers' Association, of Philadelphia. About 1924 the Maryland and Virginia Milk Producers' Association, of Washington, was operating under

the plan. Some of the proprietary milk distributors of Chicago have employed it in purchasing milk from their producers. In October, 1928, the Dairymen's Cooperative Sales Co., of Pittsburgh, adopted a modified basic surplus plan.

The Inter-State Milk Producers' Association has operated under the plan for the longest period of time with the least modification of any of the associations. It has brought about a greater degree of equalization of production throughout the year than have any of the other associations that use the plan. Therefore the plan as developed by that association is here described.

The fact that the association was able to operate for over seven years, from 1919 to 1926, without modifying the plan may have been due in considerable part to the variety of environments under which it operates. Its producers, who live in some five States,

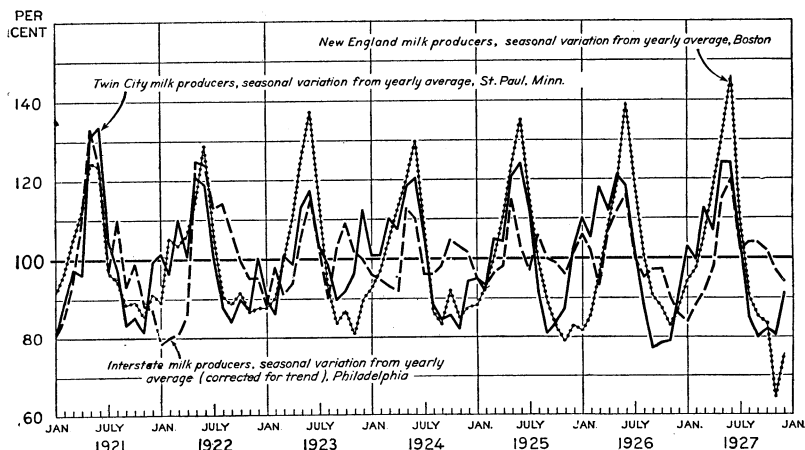


FIGURE 6.—SEASONAL VARIATION IN RECEIPTS OF THREE LARGE COOPERATIVE MILK-MARKETING ASSOCIATIONS, 1921-1927

Seasonal variation in all three associations was about the same at the beginning of the period. Although it has continued with little change in the New England Milk Producers' Association and the Twin City Milk Producers' Association, the variation decreased considerably in the Inter-State Milk Producers' Association.

some of them about 280 miles westward in Pennsylvania (a few receiving stations are more than 400 miles away), represent a variety of types of farming. Delaware, the Eastern Shore of Maryland, and a large part of the territory in New Jersey are located in the coastal plain. A small part of the territory in New Jersey and northern Maryland and eastern Pennsylvania is in the piedmont section. West of this is a strip of foothill territory extending northeast, having its western border over 200 miles west of Philadelphia. Farther west the territory becomes more mountainous. The climate in the coastal plain and the piedmont section is milder than in the foothill and mountain sections.

A joint study⁶ by the United States Department of Agriculture and the State College of Pennsylvania shows the largest herds to be in the piedmont section, the section nearest the Philadelphia

⁶ LININGER, F. F. THE RELATION OF THE BASIC-SURPLUS MARKETING PLAN TO PRODUCTION IN THE PHILADELPHIA MILK SHED. Penn. Agr. Expt. Sta. Bul. 231, 63 p., illus. 1928.

market, and the smallest herds to be in the mountain section. The largest returns from grain are found in the coastal plain and foothill sections. A much larger proportion of the land in the mountain section is in permanent pasture than is true in any other section. The members of the Inter-State Milk Producers' Association located in the piedmont section are engaged essentially in dairying, doubtless because of their proximity to market. Those of the coastal plain and foothill sections are engaged in growing crops with dairying a secondary enterprise. In the mountain section, dairying is relatively important because of the large acreage of pasture. Producers in these different types of farming, as well as individual producers, react differently to the plan. While overadjustment was taking place in one group, other groups may not have made enough adjustment. The net result has been that no peak of production has developed in the basic period of October, November, and December, and the association was able to proceed without modification from the time the plan was initiated until the beginning of 1927, and then with only a slight change.

The plan involves the establishment of a basic quantity by each producer. The basic quantity was supposed to be equal to the production during a period of the year when production and fluid sales were most nearly equal, which is a short period. From 1919 to 1926 the basic quantity of each producer was established as his average production for the months of October, November, and December. For these three months the producer received basic prices for his entire production. For the nine months following December 31 of any year he received the basic price agreed upon (f. o. b. Philadelphia minus differentials for transportation, an adjustment for varying butterfat content, and receiving-station charges if not shipped direct) for a quantity of milk equal to the average made by his herd during the previous 3-month basic period.

For any milk in excess of the producer's basic quantity up to a quantity equal to but not exceeding it, the producer received the "first-surplus" price. If the quantity of milk delivered was greater than twice the basic quantity, this excess was paid for at second-surplus prices. First and second surplus prices were calculated on the basis of the butterfat in the milk.

To illustrate the plan, assume that a patron produced an average of 3,000 pounds a month during October, November, and December of a given year. For his entire production during these three months in any year, from 1919 to 1926, he received basic prices. The 3,000-pound average was his basic quantity for the following nine months. If in May following his basic period he produced 7,000 pounds of milk he would have received basic prices for 3,000 pounds. For an amount equal to this (or 3,000 pounds) he would have received first-surplus prices. For the additional 1,000 pounds the producer received second-surplus prices.

Prices for both surpluses are based on butter prices and the assumption that the milk will not be shipped to market. Prices are f. o. b. the shipping station, and all points delivering to a receiving station receive the same surplus prices. Prices for first surplus at receiving stations are 20 per cent higher than for second surplus. Prices for basic milk bear no fixed relationship to surplus prices but

usually range from 80 cents to \$1 per 100 pounds above first-surplus prices f. o. b. the market. Under the price plan in operation during 1927 and 1928, whereby basic prices are not lowered in midsummer, the spread between basic and surplus prices reaches its maximum during the summer months.

PRESENT BASIC QUANTITY DETERMINED FROM 3-YEAR AVERAGE

Since 1926 the method of determining the basic quantity has been so modified that it now consists of a 3-year average of the last quarters of the year rather than a single year. During 1927 the basic quantity established in the fall of 1925 or 1926, whichever was the higher, was allowed. During 1928 the average of this basic quantity employed in 1927 and the monthly average of October, November, and December were used. For 1929 the basic quantity for each old producer was determined by taking the average monthly production of October, November, and December of the years 1925 or 1926 (whichever was higher), 1927, and 1928.

For the 12 months following, or for the calendar year 1929, the producer will be paid basic prices for his average production in this period during these three years. First and second surplus quantities are determined in the same way as was used previous to the modification of the period. In 1930 and thereafter, if the same procedure is continued, the basic quantity of each old producer will be determined by the average production of the three previous years during October, November, and December, making each producer's basic quantity for a series of years a 3-year moving average.

The modification by the association of the period during which the basic quantity was to be established injected into the plan a certain degree of production control in the way of limiting expansion in production, which was not included in the original plan. Under the present scheme an old producer who wishes to expand his production can not in a single year increase his basic quantity commensurate with the increase in his herd, but must accept a lower price on the greater part of his increase than he would have received on his regular production, because much of this increase will be sold the first year as surplus milk. If he can produce this additional milk at surplus prices and cover his costs, in about three years he will have established himself on the new plane and will then receive somewhat higher prices. The fact that it will take him three years so to establish himself in many instances prevents his expansion.

The new producer, the man who wishes to enter the dairy business, is now at a still greater disadvantage. Previous to 1927 the new producer who came in after January 1 of any year was allowed a basic quantity equal to 70 per cent of his first month's production after becoming a shipper. If he were a former patron who had shipped no milk during September, October, or November, his entire output would be paid for at surplus prices until the following October. Each became an old shipper on October 1 and sold all his milk at basic prices for the three last months of the year; and his new basic quantity was established as the average for these months. At most, the new patron had to wait only nine months before being on an equal basis with old shippers.

Under the present method of establishing the basic quantity, the new shipper who enters the market is more severely penalized.

The regulations in effect for 1929 to be applied to old shippers, to producers whose herds have undergone an initial tuberculin test during 1927 or 1928, and to producers beginning to ship after January 1, 1928, as published in a memorandum of the Inter-State Milk Producers' Association⁷ effective October 1, 1928, are as follows:

The established basic quantity of each producer during the first nine months of 1928 shall continue to be his established basic quantity during October, November and December, 1928.

Old Shippers

The basic quantity of each old producer to be used during 1929, shall be established by adding together the three following items and dividing the sum thereof by three:

1. Established basic quantity used for 1927 payments.
2. Average production made in October, November and December, 1927.
3. Average production made in October, November and December, 1928.

Old Shippers Without 1927 Basic Quantities

The basic quantity for 1929 of any producer having no established basic quantity for 1927 payments shall be determined by adding together the three following items and dividing the sum thereof by three:

1. Established basic quantities for 1928 payments.
2. Established basic quantities for 1928 payments.
3. Average production made in October, November and December, 1928.

Initial Tuberculin Test, 1927

Any producer whose cows underwent an initial test for tuberculosis during the year 1927, and who elected during 1928 to be paid on a basis of the basic quantity for 1927, shall for 1929 receive an established basic quantity as follows: Add together the three following items and divide the sum by three:

1. Established basic quantity used for 1927 payments.
2. Established basic quantity used for 1927 payments.
3. Average production made in October, November and December, 1928.

Initial Tuberculin Test in 1928

Any producer whose cows undergo an initial test for tuberculosis during the year, 1928, may elect to have used as his established basic quantity during 1929, either, first the basic quantity used during 1928, or second, the established basic quantity determined in accordance with the provisions governing old shippers.

New Producers from January 1, 1928, to September 30, 1928

Any producer starting to ship on or after January 1, 1928, establishing a basic quantity on a basis of 50 per cent of the first 30 days' shipment or any other basic not above 70 per cent of same, shall during October, November and December, 1928, receive basic price for 70 per cent of his production in each of those three months. His established basic quantity for 1929 shall be 70 per cent of the average daily production made in October, November and December, 1928, multiplied by 30.

New Producers after October 1, 1928, until December 31, 1928

Any producer starting to ship on or after October 1, 1928, and prior to January 1, 1929, shall during October, November and December, 1928, receive basic price for 70 per cent of his production in each of those three months. His established basic quantity for 1929 shall be 70 per cent of his average daily production made in October, November and December, 1928, on a monthly basis computed by taking the sum of his daily shipments, dividing same by the number of days shipping and multiplying the quotient by thirty.

⁷ ALLEBACH, H. D. THE 1929 PHILADELPHIA SELLING PLAN WITH DETAILED EXPLANATIONS. Inter-State Milk Prod. Rev. 9 (3) : 1, 3. 1928.

New Producers after January 1, 1929, and until Further Notice

Any producer starting to ship after January 1, 1929, shall establish a basic quantity on a basis of 50 per cent of his first 30 days' shipment.

The new shipper who begins after January 1, 1929, is allowed a basic quantity of 50 per cent of his first 30 days' production until further notice, which means that, if the distributors have plenty of basic milk to supply their requirements, he may have to continue another year or more on this basis. About the best he could hope for would be a 70-80 basis for the first three years. This feature of the plan tends to limit the expansion of milk production for the fluid-milk market by reserving for the old producer the greatest part of this market and preventing the new shipper from taking it away from him.

DESIRED RESULTS ACHIEVED THROUGH PLAN

The operation of the basic surplus plan in this market has achieved many of the desired results. A survey by the governors' tri-State milk commission, in 1917, showed that the variation in production expressed relative to the average annual production from 1913 to 1917 had a range in seasonal variation of 72 per cent from the high production of May to the low production of November. (Table 5.) This may be taken as representative of the condition existing at the time the Inter-State Milk Producers' Association initiated the basic surplus plan in 1919. Data from that association for 1921, the first year on which figures are available, showed a range of 52 per cent; this continued to decline until 1924, when the range from low to high was only 21 per cent of the average, the trend being eliminated in each case. In 1927, because of the unusually low drop in that year to 84 in January and a higher production than usual in June, the variation increased to 36 per cent of the average. This increase in variation may have been due to weather conditions more than to other changes in the production plans of farmers. The high price of cows in the fall may have prevented the herd increases that farmers ordinarily make at that time to increase their basic quantity. High feed prices may have been another contributing factor.

TABLE 5.—*Seasonal variation in quantity of milk purchased on the basic surplus plan in Philadelphia, 1921-1927*

(Expressed as percentage of the average monthly production for the particular year, corrected for trend)

Month	Average 1913-1917	1921	1922	1923	1924	1925	1926	1927
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
January.....	88	81	78	88	96	95	106	84
February.....	94	85	80	98	95	93	102	88
March.....	97	94	81	91	93	96	93	92
April.....	89	109	86	94	92	98	107	98
May.....	147	133	125	106	113	115	112	115
June.....	129	124	124	115	110	103	116	120
July.....	115	97	113	103	96	97	100	102
August.....	109	110	114	90	96	106	95	104
September.....	97	93	107	103	98	100	97	104
October.....	81	99	100	109	105	99	97	102
November.....	75	88	95	102	103	96	90	97
December.....	77	87	95	100	102	101	86	94
Range from low to high.....	72	52	47	27	21	22	30	36

The basic surplus plan, as employed in the Maryland State Dairymen's Association of Baltimore, is described in the discussion of that association. Its original form was similar to that used by the Inter-State Milk Producers Association. The small size of the milk shed from which it drew milk, the lack of diversity in types of farming in the territory, the opportunity for alternative enterprises in crop production, and the varying profitableness of these crops from time to time combine to increase the probability of all producers readjusting in the same direction. These factors made necessary an earlier modification in the plan than in Philadelphia. It is not possible to say whether the Philadelphia group will proceed farther in the direction of the plans developed in Baltimore but, if it wishes to do so, much of the experimental work has been done.

Under the present plan employed in Philadelphia, the patron who produces less than his usual average during October, November, and December is penalized only in that one-third of this decrease in production will go to lower his basic quantity. In the plan of the association in Baltimore, if he fails to maintain his old basic quantity, he takes the new lower average of October, November, and December, and thereby loses a portion of the fluid market which has been allotted to him. This serves as a spur to maintain his production during the last quarter of the year. The fact that the Maryland State Dairymen's Association uses an average of production for the last quarters of 1921, 1922, and 1923 for establishing a basic quantity has made more difficult the problem of equitably establishing a basic quantity for new members. It has retained for the continued producer who has maintained the supply, a degree of monopoly of the fluid-milk market that can not be destroyed by the new producer.

The operation of the basic surplus plan in the Dairymen's Cooperative Sales Co., of Pittsburgh, is new. Under the plan initiated in October, 1928, and still in effect, the average production during October, November, December, and January forms the basis of allotment of the fluid market to each producer for the following 12 months. It differs from the original plan used in Philadelphia and Baltimore in that the distributor pays fluid prices for only that portion of the milk that is used for fluid consumption. The producer is allotted a part of the fluid-milk market determined as a percentage of his basic quantity. This is taken as the ratio of sales of fluid milk by all distributors in the month of least sales to the average monthly production during the basic period; that is, if the association finds the month of lowest sales to be January and that total sales during January are just 70 per cent of the average monthly production during the following October, November, December, and January, then for the following year each producer will be paid fluid prices for 70 per cent of his average production during the four months of the basic period. (See p. 78 for detailed illustration of plan.) As was the case in the Philadelphia and Baltimore markets, once the basic quantity of a producer has been established, there is no penalty if he produces less than his basic quantity. Overproduction during the remainder of the year, but not underproduction, is penalized.

The Maryland and Virginia Milk Producers' Association, of Washington, D. C., operates on a plan which is practically like that employed by the Maryland State Dairymen's Association.

Recently the New England Milk Producers' Association has aroused considerable sentiment toward using a basic surplus or "rating" plan. The plan under discussion uses the average production (adjusted to a 30-day month) of October, November, and December as the basic quantity. Milk would be sold to the dealers on a classification basis, as at present, and the producer would be paid a weighted average price of all sales for a quantity up to twice his basic quantity. For any quantity in excess of this he would be paid surplus prices. It has been suggested that the producer be allowed average prices for twice the basic quantity during the first year, for one and three-fourths times that quantity during the second year, and one and one-half times the basic quantity in the third year, or with similar changes in this direction until a proper balance is reached. The suggested plan would not affect a great many producers during the first year, but would accustom producers to a rating plan and would penalize, to some extent, the most serious offenders.

The Pure Milk Association of Chicago, which began active cooperation with distributors effective January 1, 1929, is employing a rating plan of payment to producers. The basic period is taken as September, October, and November. The plan has been in effect such a short time that the course it will follow is not certain. The outline provided that for April, 1929, 120 per cent of the basic quantity would be paid for at basic prices; for May, 110 per cent; for June, 105 per cent; and for July 120 per cent. The entire production during August was to be taken at basic prices. The following year the percentages may be modified, but apparently the rating plan will be a part of the association's marketing plan.

THE CONTRACT PLAN

In another plan of adjusting production throughout the year, frequently termed the "contract" plan, the producer himself names the basic quantity.

AS EMPLOYED BY CONNECTICUT MILK PRODUCERS

The Connecticut Milk Producers' Association, of Hartford, Conn., operating throughout the State, has successfully employed the plan for a longer period of time than has any other association. As operated by that association, the plan attempts to control production only with respect to seasonal variation.

Upon signing the contract with the association previous to March 31 of any year, the producer states the quantity of milk which he proposes to deliver daily for the next 12 months, beginning April 1. He may state any quantity in excess of his previous year's contract, the same quantity, or a smaller quantity. Penalties are provided for any excess production above the contracted quantity, or for any shortage if production is below the contract. Penalties are not exacted on the basis of each day's deliveries, but on the average for each payment period, which is usually 30 or 31 days; that is, if a producer contracts to deliver 40 quarts per day and his deliveries for the 30-day

period from September 1 to 30 are 1,500 quarts, he is penalized for overdelivery of 300 quarts.

The plan provides that the producer shall be penalized 2 cents a quart for any production in excess of his contract or for any quantity by which he fails to meet his contract during any payment period. The milk is sold to the distributors on a classification basis, according to the use made of the milk. The penalties for variation in deliveries from the contracted quantity do not go to the distributors to lessen their cost, but are pooled by each distributor and prorated back to the producers so that those whose production most nearly meets their contracts receive the greatest share in these penalties. All producers share in the penalty pool and, since it is highly improbable that any producer can exactly meet his contract, all producers probably pay penalties. However, if a member's production varies little from this contracted quantity, he pays only a small penalty and receives a much larger share, the net effect of which is a bonus for even production.

In Table 6 and Figure 7 are illustrated the method of exacting and distributing penalties. It has been assumed that each of 21 producers

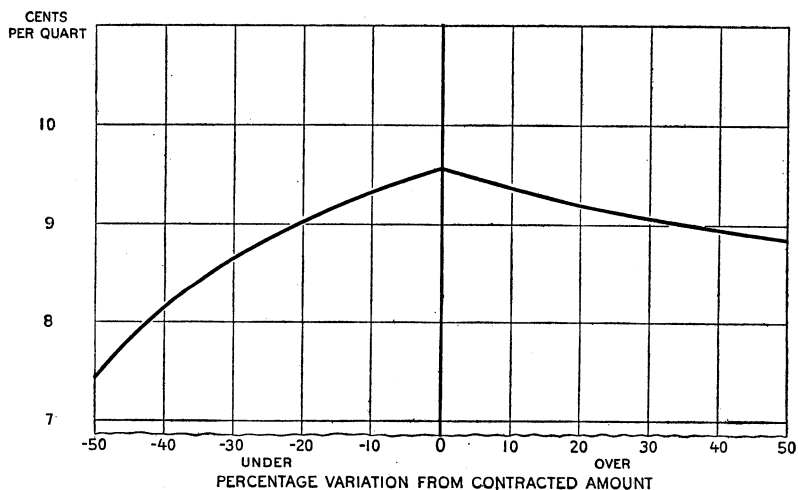


FIGURE 7.—PRICES THAT WOULD HAVE BEEN RECEIVED BY PRODUCERS THROUGH THE CONNECTICUT MILK PRODUCERS' ASSOCIATION UNDER A GIVEN DISTRIBUTION

Some of these producers delivered as much as 50 per cent below their contracts and others as high as 50 per cent above. One producer produced the quantity contracted for.

who are the patrons of a given distributor have contracted to deliver 200 quarts a day, or 6,000 quarts during a 30-day payment period. Some of these producers delivered as much as 50 per cent below their contracts, and others as high as 50 per cent above. Others ranged in between, and one member produced according to his contract. The weighted average price to be paid for milk by the particular distributor to which these men ship is taken as 9 cents a quart.

TABLE 6.—*Penalty distribution under Connecticut Milk Producers' Association contract plan of equalizing production*

Producer No.	Amount contracted per month	Amount delivered	Variation from contract			Gross amount due producers at 9 cents a quart	Penalties at 2 cents a quart
			Percentage	Quantity over	Quantity short		
	<i>Quarts</i>	<i>Quarts</i>	<i>Per cent</i>	<i>Quarts</i>	<i>Quarts</i>	<i>Dollars</i>	<i>Dollars</i>
1.....	6,000	3,000	-50	-----	3,000	270	60
2.....	6,000	3,300	-45	-----	2,700	297	54
3.....	6,000	3,600	-40	-----	2,400	324	48
4.....	6,000	3,900	-35	-----	2,100	351	42
5.....	6,000	4,200	-30	-----	1,800	378	36
6.....	6,000	4,500	-25	-----	1,500	405	30
7.....	6,000	4,800	-20	-----	1,200	432	24
8.....	6,000	5,100	-15	-----	900	459	18
9.....	6,000	5,400	-10	-----	600	486	12
10.....	6,000	5,700	-5	-----	300	513	6
11.....	6,000	6,000	0	-----	-----	540	0
12.....	6,000	6,300	5	300	-----	567	6
13.....	6,000	6,600	10	600	-----	594	12
14.....	6,000	6,900	15	900	-----	621	18
15.....	6,000	7,200	20	1,200	-----	648	24
16.....	6,000	7,500	25	1,500	-----	675	30
17.....	6,000	7,800	30	1,800	-----	702	36
18.....	6,000	8,100	35	2,100	-----	729	42
19.....	6,000	8,400	40	2,400	-----	756	48
20.....	6,000	8,700	45	2,700	-----	783	54
21.....	6,000	9,000	50	3,000	-----	810	60
Total.....	-----	-----	-----	-----	-----	11,340	660

Producer No.	Gross amount less penalties	Refund at 6.18 per cent	Total due the producer	Net loss	Net gain	Average price per quart received by producers
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Cents</i>
1.....	210	12.98	222.98	47.02	-----	7.43
2.....	243	15.02	258.02	38.98	-----	7.82
3.....	276	17.06	293.06	30.94	-----	8.14
4.....	309	19.10	328.10	22.90	-----	8.41
5.....	342	21.13	363.13	14.87	-----	8.65
6.....	375	23.17	398.17	6.83	-----	8.85
7.....	408	25.21	433.21	-----	1.21	9.03
8.....	441	27.25	468.25	-----	9.25	9.18
9.....	474	29.29	503.29	-----	17.29	9.32
10.....	507	31.33	538.33	-----	25.33	9.44
11.....	540	33.37	573.37	-----	33.37	9.56
12.....	561	34.67	595.67	-----	28.67	9.46
13.....	582	35.97	617.97	-----	23.97	9.36
14.....	603	37.26	640.26	-----	19.26	9.28
15.....	624	38.56	662.56	-----	14.56	9.20
16.....	645	39.86	684.86	-----	9.86	9.13
17.....	666	41.16	707.16	-----	5.16	9.07
18.....	687	42.46	729.46	-----	.46	9.01
19.....	708	43.75	751.75	4.25	-----	8.95
20.....	729	45.05	774.05	8.95	-----	8.90
21.....	750	46.35	796.35	13.65	-----	8.85
Total.....	10,680	660.00	11,340.00	188.39	188.39	-----

The penalties to which each producer is subject are shown in column 8, the total being \$660. This amount is prorated back to each producer on the basis of the gross amount due each producer minus penalties, or the amounts shown in column 9. By dividing the total of column 8 by that of column 9, or \$660 by \$10,680, it is found that each producer will be refunded from this penalty pool 6.18 per cent of the gross amount minus penalties due from him (amounts of column 9). The refunds from the penalty pool for each producer are shown in column 10 and the total amount due each is shown in column 11. The net loss or gain to the producer over what he would have received at 9 cents per quart is given in columns 12 and 13, and the net price per quart paid the producer, in column 14.

From Table 6 and Figure 7 it is evident that underproduction is penalized more severely than overproduction. A shipper who produces 35 per cent above his stipulated quantity, under these conditions, receives 9 cents or average price, while the producer who is only 20 per cent under his contract receives approximately the same price. The producer who falls 50 per cent below the quantity stipulated in the contract receives 7.43 cents per quart for his shipments, whereas the one who produces 50 per cent in excess of his stipulated quantity receives 1.42 cents more, or 8.85 cents per quart.

If the member's production does not vary more than 10 per cent in either direction, his refunds are so much in excess of his penalties that he receives a substantial premium for his even production. In fact, a variation of 15 per cent in either direction penalizes him but little. If there is any doubt in the producer's mind as to the quantity he is likely to produce, he should underestimate it rather than overestimate it.

In Figure 8 the contracted quantity and actual deliveries for the various months of 1925, 1926, and 1927, adjusted to a 30-day basis, are

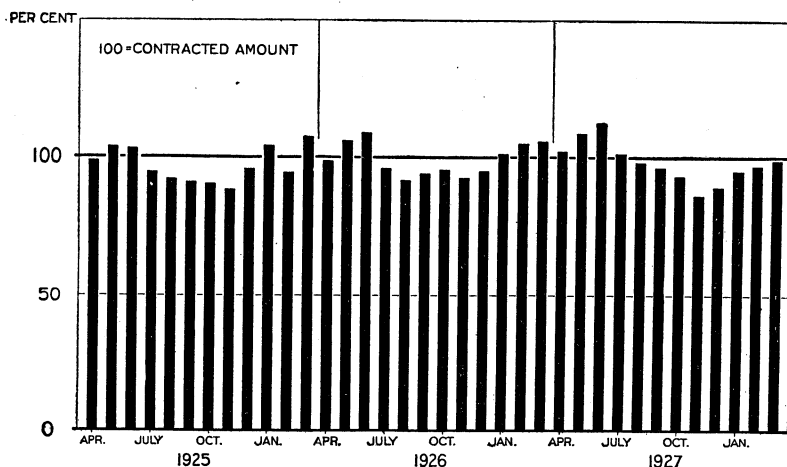


FIGURE 8.—MILK PRODUCTION BY MEMBERS OF CONNECTICUT MILK PRODUCERS' ASSOCIATION EXPRESSED AS PERCENTAGE OF CONTRACTED QUANTITY, 1925-1927

Production was less than that contracted by producers in 8 of the 12 months during 1925, in 7 months of 1926, and in 8 months of 1927.

shown. During 1925, producers fell under their contracted quantity in 8 of the 12 months, during 1926 in 7 months, and during 1927 in 8 months. Apparently there has been a tendency on the part of producers to overestimate the quantity to be produced and this fact has made it especially profitable for the man who underestimates his production rather than overestimates it.

It is doubtful if most of the members know of the difference in returns from over or under production, relative to the contracted quantity. The member's check shows the amount of penalties and refunds, and he is aware that a penalty of 2 cents a quart is exacted for either over or under production, which tends to fix in his mind that he is penalized equally for both. The difference in the rate of refund is not placed prominently before him.

The curve of prices per quart for over or under production (fig. 7) remains the same shape, regardless of the size of the producer's contract. A member who produces 50 per cent above his contract receives the same price per quart regardless of whether he has stipulated 10,000 or 1,000 quarts. Likewise the member who agreed to furnish 1,000 quarts every 30 days receives the same price per quart as the one who agreed to furnish 10,000 quarts, if each producer has produced only 50 per cent of his contract. The curve of prices per quart may move up or down the scale, depending upon the number of producers delivering above or below their contracts, but the relationship remains the same for over and under production; actual refunds are smaller or larger and make less absolute change in prices per quart.

Each pooling distributor makes the deductions and pays out the penalties in the form of refunds to the particular producers who ship to him that month. For that reason the refund per quart for two producers who ship to different distributors, and who vary from their contracts a certain amount, as 15 per cent in a given direc-

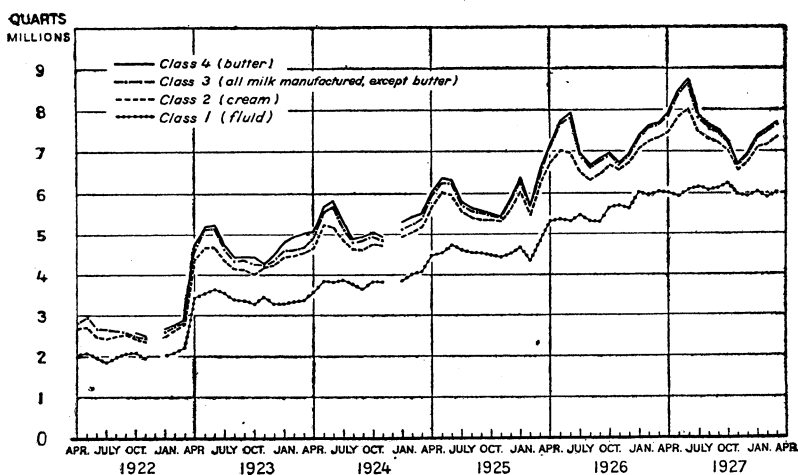


FIGURE 9.—RECEIPTS AND UTILIZATION OF MILK SOLD BY CONNECTICUT MILK PRODUCERS' ASSOCIATION, 1922-1927

Over two and one-half times as much milk was received by the association in 1928 as in 1922. Most of the increase in sales went into classes 1 and 2.

tion, may vary slightly but not enough to be of any significance. To pool all penalties in one pool would require the sending out of refund checks by the association and would increase the cost of administration of the plan.

The contract plan was initiated in April, 1922. Although there has been a large increase in membership, the seasonal variation has been lessened somewhat and maintained at a low figure. (Table 6.) June production is not ordinarily more than 20 per cent above November production, usually the lowest of the year. Any producer may expand his production and increase his contract on April 1 of each year, but production has not increased enough to make burdensome supplies or to reduce prices. A considerable part of the cream used in Connecticut comes from outside the State. Data presented in Figure 9 indicate that in six years (April, 1922, to

April, 1927) the volume of business of the association increased to over two and one-half times what it was in 1922. At the end of this period an average of 80 per cent of this total volume (Table 7), was being sold as fluid milk, as compared with 75 per cent of the association's production in 1922. This indicates that consumption was more than keeping pace with production.

TABLE 7.—Percentage of milk sold in various classes by the Connecticut Milk Producers' Association, by months, 1922-1927

Year beginning April	Class 1, milk used in fluid form	Class 2, milk used for fluid cream	Class 3, milk used for manufactured products other than butter	Class 4, milk used in making butter	Year beginning April	Class 1, milk used in fluid form	Class 2, milk used for fluid cream	Class 3, milk used for manufactured products other than butter	Class 4, milk used in making butter
1922	Per cent	Per cent	Per cent	Per cent	1925	Per cent	Per cent	Per cent	Per cent
April.....	72.6	19.4	8.0	-----	April.....	74.0	19.7	4.1	2.2
May.....	69.7	23.7	6.6	-----	May.....	71.2	23.5	3.7	1.6
June.....	69.4	21.3	9.3	-----	June.....	74.9	19.7	3.9	1.5
July.....	73.1	19.5	7.4	-----	July.....	79.3	16.5	2.9	1.3
August.....	69.5	20.5	10.0	-----	August.....	80.3	15.6	2.8	1.3
September.....	74.9	19.4	5.7	-----	September.....	81.3	14.8	2.9	1.0
October.....	78.8	18.3	2.9	-----	October.....	81.1	16.0	2.1	.8
November.....	83.9	12.0	1.0	3.1	November.....	82.0	16.2	1.6	.2
December.....	78.2	16.1	2.9	2.8	December.....	76.7	18.9	3.7	.7
January.....	75.0	17.7	3.7	3.6	January.....	73.2	21.4	3.8	1.6
February.....	75.3	19.7	2.7	2.3	February.....	74.9	20.1	3.7	1.3
March.....	76.8	19.8	1.3	2.1	March.....	74.0	20.8	3.8	1.4
1923					1926				
April.....	74.0	18.9	4.2	2.9	April.....	74.4	19.2	5.2	1.2
May.....	68.3	21.8	8.4	1.5	May.....	69.8	21.1	8.5	.6
June.....	69.8	19.8	8.5	1.9	June.....	67.4	20.8	10.3	1.5
July.....	75.5	17.0	5.6	1.9	July.....	78.9	14.5	5.9	.7
August.....	76.5	17.3	4.2	2.0	August.....	80.1	14.6	4.5	.8
September.....	76.2	17.0	5.3	1.5	September.....	77.6	16.4	4.8	1.2
October.....	74.4	16.4	5.2	4.0	October.....	81.5	14.6	3.5	.4
November.....	80.6	17.5	1.5	.4	November.....	85.0	12.8	1.8	.4
December.....	73.2	20.9	2.8	3.1	December.....	81.6	15.7	2.5	.2
January.....	68.2	23.4	3.8	4.6	January.....	81.8	14.3	3.2	.7
February.....	67.5	22.6	3.0	6.9	February.....	78.5	16.5	4.4	.6
March.....	66.9	23.0	3.0	7.1	March.....	78.3	16.9	4.2	.6
1924					1927				
April.....	70.0	21.3	5.1	3.6	April.....	75.9	18.5	4.6	1.0
May.....	67.7	24.2	5.4	2.7	May.....	70.6	22.4	6.1	.9
June.....	65.9	23.0	9.1	2.0	June.....	69.8	21.9	7.1	1.2
July.....	73.2	19.0	5.3	2.5	July.....	78.3	17.1	3.9	.7
August.....	77.8	16.9	3.7	1.6	August.....	79.7	15.9	3.9	.5
September.....	74.0	19.3	4.7	2.0	September.....	81.8	14.4	3.5	.3
October.....	75.9	17.9	3.8	2.4	October.....	85.9	11.0	2.8	.3
November.....	77.4	18.3	2.9	1.4	November.....	89.5	8.5	1.8	.2
December ¹	-----	-----	-----	-----	December.....	85.8	11.6	2.3	.3
January.....	72.5	20.5	3.4	3.6	January.....	81.8	14.3	3.2	.7
February.....	73.7	19.4	2.9	4.0	February.....	78.4	16.5	4.4	.7
March.....	73.8	19.9	4.1	2.2	March.....	78.3	16.9	4.2	.6

¹ Information not available.

AS USED BY THE OHIO FARMERS COOPERATIVE MILK ASSOCIATION

A contract plan employed by the Ohio Farmers Cooperative Milk Association, Cleveland, Ohio, aims to equalize production throughout the year. The producer states, before May 10 of each year, the total quantity of milk that he will supply to the association during the 12 months following June 1 thereafter. One-twelfth of this quantity is considered the specified quantity he will deliver each month. The sum of all these monthly contracts is the total supply which the association can contract with the distributors. If the

total milk delivered by a producer in any month exceeds his contracted quantity, only that portion which he has contracted is entered in the pool and paid for at pool prices. The quantities delivered by members in excess of their contracts are sold; each producer receives for his excess an average of such price as the association is able to obtain minus the necessary handling charges and other deductions authorized by the board of directors of the association under authority of the advisory council.

In case the actual total production of all members falls below the total quantity contracted by the association, the board of directors has power to authorize the purchase of milk outside the membership. The difference between the amount paid for such milk and cream and the price received for it by the association is charged to the accounts of delinquent producers and deducted from their milk checks on the basis of the difference between the quantity each has contracted to produce and his actual deliveries. If the group as a whole does not underproduce, the plan results in no penalty for those individual members who underproduce.

PLAN OF SCIOTO VALLEY MILK PRODUCERS' ASSOCIATION

The Scioto Valley Cooperative Milk Producers' Association, of Columbus, Ohio, has employed a contract plan. Their contract period coincides with the calendar year. These contracts run continuously, but either party may withdraw at the end of the period, giving 30 days' notice before that time.

Upon signing the contract the producer states the average daily production he will deliver during the year following. As long as the contract continues in force he has the privilege of naming a new quantity for delivery at any time between the 1st and 25th of January of each year. The producer is paid fluid or base prices, which are agreed on in a conference of distributors and the producers' association, for a quantity of milk equal to but not exceeding the quantity stipulated in his contract, and for all milk in excess of this contracted quantity he receives prices based on Chicago 92-score butter prices. If the producer delivers less than his monthly total as established by his daily average contract, he receives base price for the actual quantity delivered minus a deduction of a sum equal to the number of pounds of shortage multiplied by the difference in price between base and manufactured milk, but in no event does this price fall below the manufactured price.

Assuming that a producer has contracted to deliver 100 pounds per day, or 3,000 pounds in a 30-day month, assume that in June he delivers 4,000 pounds; 3,000 pounds would be sold at fluid or, as termed by that association, base prices, and 1,000 pounds at manufactured prices. If it is assumed that these prices are \$3 and \$2, respectively, per 100 pounds, the producer would be paid $(\$3 \times 30) + (\$2 \times 10) = \$110$, or an average price of \$2.75 per 100 pounds. If, in the following November, the member's production falls to 2,000 pounds during the month and prices for fluid and manufactured milk are taken at \$3.25 and \$2.25, respectively, the average price received will be $(20 \times \$3.25) - (\$3.25 - \$2.25) \times (3,000 \text{ pounds} - 2,000 \text{ pounds}) = \$65 - (\$1 \times 10) = \$65 - \$10 = \55 . The aver-

age price received by this producer would be \$2.75 per 100 pounds, or 50 cents per 100 pounds less than if he had produced according to his contract. The contract is signed by the distributor, the producer, and the producers' association, and is frequently termed a "three-way contract."

DAIRYMEN'S LEAGUE COOPERATIVE ASSOCIATION PLAN

The Dairymen's League Cooperative Association (Inc.) of New York, has endeavored to influence production by educational campaigns. They have no doubt had some beneficial effect, but the variation in production in New York has followed much the same movement as in Vermont, which lies outside the league's territory and the influence of its campaign. As a means of correcting this variation in certain localities, production differentials have been established. The producer states the quantity of milk he will deliver monthly during the following year. He is allowed a 20 per cent variation either above or below this stated quantity. If his production does not vary more than 20 per cent from this quantity in any month, he receives his share of the production bonus set aside for his station or city.

For example, if the production bonus set aside for a given city is 15 cents per 100 pounds on all class 1 milk delivered, and each farmer produces not more than 15 per cent above or below his contracted quantity each receives 15 cents per 100 pounds more on the proportion of milk going into class 1 than do those whose variation is greater. If a part of the producers in the territory where this premium is in effect have a variation in production such that they are not entitled to the premium their share is prorated among those who maintain their production within the stipulated limits. The result is that each producer sharing will receive a somewhat higher figure as, perhaps, 25 cents per 100 pounds.

In determining the net pool prices on all milk, the funds for these premiums are first set aside, and all remaining are divided by the total quantity of milk, which gives the pool price. This is the price received by the man who is outside production-differential territory or who does not receive the premium because of his variation in production.

THE PLANS COMPARED

Both the basic surplus and contract plans have proved effective in adjusting production. But because a plan accomplishes certain results in a given milk shed it does not necessarily follow that the same results may be expected in another milk shed where conditions are somewhat different. It is probable, however, that the principles of either plan may be applied successfully in any area. Each plan must be fitted by those administering it to the particular conditions of the milk shed in which it operates. The greater the production in excess of fluid consumption in the market in the milk shed and surrounding territory the more difficulty will be experienced in operating the plan. The most important factor in its success under any circumstances is probably the whole-hearted cooperation of the distributors who handle the greater part of the milk.

It has been the experience of the cooperatives operating under these plans that, in the cases in which only a few distributors handle a large proportion of the business, it is easier to obtain their approval of the idea than it is to convince the distributors when the business is divided among a larger number. Summer competition from those producers outside the cooperative who do not attempt to regulate their production is greater in a surplus than in a deficit area. If the distributors are united in cooperating with the association and, by so doing, protect their own interests, little difficulty may be experienced from the outside producers as long as prices are kept at about the point justified by current market conditions.

The contract plan has a degree of flexibility not so easily attainable in the basic surplus plan. The former places upon the member the responsibility for the quantity which he should attempt to produce each month. If he overestimates or underestimates this quantity, the blame falls upon himself. The basic surplus plan leaves more to chance the establishment of a quantity which forms the producers' basis of payment. Either plan may have features which penalize the producer for underproduction, although the usual basic surplus plan as now employed does not. Either plan may be operated with a classification or sale plan so that the distributor purchases his milk on the basis of the use which is made of it, whereas the farmer is paid in relation to some established base. The plan used by the Inter-State Milk Producers' Association does not do this; payments to the farmers are on the same basis as are sales to the distributors. The distributor takes any gain or loss that results because his basic milk is below or in excess of the quantity consumed in fluid form.

PRICE POLICIES AND PLANS

The principles to be followed in establishing a price for milk in any market by cooperative fluid-milk marketing associations must follow economic laws. Although the forces of supply and demand must determine milk prices over a period of time, there are many factors which determine how quickly the price will adjust itself to these forces. Because of the hindrances to their operation in the milk business in the way of sanitary restrictions, contracts, various buying plans, customs of the trade, and possibly inadequate information as to supplies, prices are in many respects man-made. If the adjustments are instituted with skill and in accordance with economic laws, prices may be made to react in such a way as to benefit producers materially. Because of the quick reactions resulting from establishing a price out of line with supply and demand conditions, most fluid-milk cooperatives early turned from any idea of monopoly control. This in spite of the fact that many, developing during the World War, were established on the principle of securing "cost of production plus a reasonable profit," and that their prices, during the war, were based largely on the estimated cost of production.

To be successful over any extended periods, a price policy must meet the needs of the situation involved. It must establish a price that seems fair to both producer and consumer. From the producer's standpoint the price must not be so low as to make his production unprofitable. From the standpoint of the consumer it must be low

enough to allow him to purchase an adequate supply. The two-fold aim will be most nearly accomplished if the price established is such that the quantity produced and the quantity consumed will be maintained in such balance that drastic readjustments will not take place.

The quantity of milk produced responds quickly and markedly to changes in prices of milk and of feed (particularly the concentrates). The quantity of fluid milk that the consumer will buy is only slightly affected by moderate changes in price. If the price is placed either too high or too low, production may be adjusted to the new level of prices long before what is taking place is definitely recognized. If the retail price is too high its effect on consumption may be slight. If producers' prices are at a corresponding level the result is likely to be a supply of milk greatly in excess of the quantity required for consumption in fluid form. However, the period required for this reaction to become effective may vary from two months to more than a year. If the prices are too low consumption may be increased a little, but in a relatively short period production may fall off until it is not sufficient for fluid requirements. In that case, prices must be advanced, which will stimulate production again and tend to cut down consumption, or other areas must be drawn upon to make up the deficit, or both. If the distributors continue to receive milk from the outside areas, when the regular producers respond to the increase in prices or when their production increases seasonally, the market will be called upon to absorb more milk; in the end this must result in lower price.

Before any cooperative-marketing association can intelligently determine what course to follow in establishing a price it should know the basic facts as to the relation of price changes to production in its territory and the relation of price and price changes to consumption.

A knowledge of the range in costs of milk production is essential in determining how much milk is likely to be produced at a given price. However, if too large a quantity of milk is now received in a market, the producers' association is not warranted in raising the price of milk merely because the average cost of production is high. If prices are to be stabilized, production must be relatively stable.

The fact that demand is so regular and constant has resulted in practically a fixed-price plan of sales, with infrequent changes. Because of this, prices to the producer are usually fixed for as long a period as one month without any fluctuations. This fixing is often done in advance. In many of the markets certain modifications are in effect which provide for arriving at prices for the quantities moving into fluid consumption and for the volume used for less valuable products. In each case there is a fixed or contract price for some period of time. In this respect the basic sale of milk differs from any other agricultural commodity.

Hardly more than a decade ago the flat-price plan was the accepted method of purchasing milk. The distributor bought the producers' milk at a given price. The distributor sold all he could for fluid use and manufactured or disposed of the remainder as profitably as possible. He took whatever risk was involved in having to dispose of a part of the milk at a lower price. He established his flat price so low that the average price of all milk sold would compensate him for any risk involved.

With the coming of the cooperative association to represent the producers, the distributor continued to use the same argument for lower prices that he had used for years: That there was so much surplus he could not profitably dispose of the milk unless his buying price was low. In many markets it was felt that this was often used as an argument to place prices lower than they should be. It was proposed that the distributor show the producers exactly the quantities he sold for different uses, and that a basis of payment be arranged according to the quantities of milk sold in each of these classes. The plan is usually known as the "Classification" plan and sometimes as the "Use" plan.

The producers have asked a higher price for fluid milk on the ground that it is worth more than milk for manufacturing purposes; that the consumers of fluid milk will pay increased prices without appreciably curtailing consumption; and that higher fluid-milk prices will have less tendency to result in an increase in supply than is the case with the price of manufactured-milk products. The near-by producer enjoys a partial monopoly of the fluid market, but for that portion of his milk used to supply cream or for manufacture he must compete on a country-wide or world-wide basis with producers in those localities which are not accessible to a fluid market. Fluid milk can be shipped great distances and arrive in a satisfactory condition, but with prices and transportation rates on the present level, the distance that this can be done economically is limited. About 400 miles is the maximum distance that any considerable quantities now move. The problem of increased cost of sanitary inspection and regulation is another factor that tends to limit the distance from which supplies are obtained by a market. These obstacles tend to limit the supply of fluid milk available in a given market at the usual prices which can be placed somewhat higher than prices of milk for other uses.

Cream can be shipped economically much greater distances than milk because of its more concentrated form. The production of a given number of cows occupies about one-tenth the space and weighs correspondingly less when shipped as cream. Cream rates are approximately one-fourth higher than those on milk. The result is that cream can be shipped rather economically, under present rates, for relatively long distances. Points on the Atlantic seaboard receive large quantities of cream from Minnesota, Wisconsin, Michigan, Iowa, and Kansas. This makes the producer near the east coast a competitor of the dairyman in the Middle West in cream production.

Shipments of cream to eastern points have increased rapidly during the last few years. Data of the New England Milk Producers' Association show that receipts of western cream in Boston have practically doubled each year since 1925. In that year the volume was 217,000 quarts; in 1926, 554,000 quarts; in 1927, 1,315,000 quarts; and in 1928, approximately 2,500,000 quarts, which was about 10 per cent of the city's cream receipts. In November, 1928, western cream receipts amounted to about 40 per cent of Boston's cream receipts. Because of the large supply area whose producers can profitably compete for any market the price of milk skimmed for cream is placed lower than that for fluid milk.

Prices for milk made into butter, cheese, and other manufactured products range still lower than for that made into cream. Transportation costs for butter are so low, when considered in terms of milk, that any producer is on fairly equal terms with any other in the United States in competing for any market. For that reason, the dairyman who has no other market and whose costs are low enough so that he can compete with anyone else in the country will produce for the butter market. Milk for many other manufactured products can be produced with about the same care and at a similar cost. Therefore, prices for milk that is used in these products are usually somewhat near those for milk used in making butter.

The greater the quantity of milk in any milk shed in excess of that needed for fluid purposes, the nearer fluid prices must be to those of milk used in manufactured dairy products. Because of this large supply that might be used for fluid consumption, every producer within the milk shed is a potential fluid-milk producer; therefore the difference in prices for fluid milk and for manufactured milk can be only a little more than the increased care in producing milk for the fluid market costs the producer. If the spread between these is wide it is impossible to keep distributors from purchasing this excess milk at lower prices and underselling their competitors. Milk for cream in such an area must also be sold at practically the same price as for manufactured products.

The number of price classes into which milk for sale has been divided varies with different associations. Some have elaborate classifications; others have confined themselves to two classes. The uses to which the milk is put should largely determine the classification.

In some sections practically all of the milk not used in fluid form is skimmed for cream. In that case two classes—fluid and surplus—are satisfactory. In others, where a portion of the supply is made into butter or cheese, a third class is desirable. In a section of heavy surplus, conditions may warrant little higher price for milk used in cream than for butter manufacture, and a twofold classification may prove satisfactory. It is probable, however, that a threefold classification as a general rule will reflect the proper price relationship between supply and demand for the different uses more adequately than a twofold one. Additional classes render more complicated the administration of the plan but if a sufficiently distinct line can be drawn with respect to uses a more elaborate classification may prove profitable.

The most usual method of arranging a price for class 1 or fluid milk is by a conference between distributors and the producers' organization. No two markets are exactly alike in the factors that should be considered, or weights given to these factors. Through experience a number of associations have found that the price can be placed too high. In the first place, this high price may cause the average price received by producers to be high, which soon results in an expansion of production that forces prices down. It may also so widen the difference in price between class 1 or fluid milk and the one or more classes of surplus that the price to cooperating dis-

tributors is much higher than that their noncooperating competitors have to pay. The latter, securing their product at a lower price, are likely to cut prices to the individual consumer.

Unless sales prices for fluid milk by the cooperative are reduced, the cooperating distributor is faced with a loss of business, or he must reduce his prices to the consumer. If he pays the higher price for his milk and charges a lower price it may result in a loss. The difference between the price of class 1 milk and the price of surplus milk is limited in this way, and the price of surplus milk must be closely related to the prices of manufactured products, particularly of butter. The average selling price which the distributor receives for milk must necessarily determine an upper limit on fluid prices.

Frequently the family-delivered price may be at a certain figure, as 15 cents; but a considerable quantity may be sold to stores or restaurants at a lower price, making the average selling price as much as a cent or more lower. It is this average price that must form the basis of dealing. As a general rule, the higher this price, the higher the fluid price is likely to be placed. The spread between the distributor's purchasing price and his selling price can not be constant for all markets. If operating with equal efficiency variation in distributor's costs in different markets may be due chiefly to differences in labor and transportation costs. The general wage scale, degree of unionization of labor, size of the city, and location of milk terminals, all influence these factors. Because distributors in one city can operate on a $5\frac{1}{2}$ -cent spread between buying and selling prices, it does not necessarily follow that, to be as efficient, the distributor in another city must operate on that spread.

The distributor's average selling price for fluid milk, the price of surplus milk, the probable difference between the prices to be paid by distributors for fluid milk and surplus milk, the general price level of all commodities, the level of milk prices as compared with costs (particularly feed concentrates), and the quantity of milk in excess of probable fluid-milk consumption are all factors that must be given consideration in establishing a price for that portion of the milk sold for consumption in fluid form.

In arranging prices for milk that is skimmed for cream, the price of butter is the most important single factor. Cream prices are always related to the butterfat contained therein. The premium that is possible for producers in any market to secure above butterfat prices is dependent upon whether enough is produced in the territory ordinarily considered as the market's milk shed, the maximum distance it must be shipped from the borders of this milk shed, together with the cost of transportation and the restrictions placed by the board of health upon the entry of outside cream into the market. If the market in which there is not an excess supply of cream does not admit cream from outside its own inspection district and milk shed, the price at which distributors can secure cream in the open market will be above that at which it can be obtained in surrounding markets which admit outside cream on an equal trading basis.

The prices of western cream sold in eastern markets are usually arranged with New York 92-score butter as the basis. Some of the brokers sell cream on the basis of New York 92-score butter price plus 20 per cent, plus 5 cents a pound for the butterfat contained

therein. With the above grade of butter selling at 50 cents, the price of butterfat in sweet cream would be $\$0.50 + (\$0.20 \times \$0.50) + \$0.05 = \$0.50 + \$0.10 + \$0.05 = \0.65 a pound. Sales may also be arranged at a definite percentage of increase above butter prices. Another practice is the sale of cream on the basis of a fixed premium above the New York butter market. This, during 1928 and 1929, has frequently ranged from 20 cents to 22 cents over the New York 92-score market for the butterfat in the cream. If the New York 92-score price is 50 cents, cream would be selling at 70 cents to 72 cents per pound of butterfat cost, insurance, and freight to the eastern buyer. Local cream may sell at a slight premium over cream that must be shipped long distances as it is easily obtained and as the distributor sometimes feels that the quality may be superior. Prices of surplus milk in a deficit area, where outside cream must be brought in but is permitted free entry, must be governed largely by the price at which the market can obtain this outside cream.

Where there is more than enough milk to supply all the fluid-milk and cream requirements, the price of milk for cream must be about the price at which sweet cream can be obtained from the country. This will be probably somewhat above the price of butterfat employed in manufactured products. The price must be enough higher to induce the producer to deliver his product in a better condition and more frequently than for the usual manufacture of butter. This has been placed by many at about 20 per cent above 92-score butter prices in a central market.

Prices for milk made into butter must be determined by the returns that can be secured for the butter. For other manufactured products with a less organized market than butter, prices of the latter have an important bearing, but the price at which the product can be sold and its cost of manufacture are significant in determining an equitable milk price.

In establishing prices for milk in classes other than fluid, cooperative associations have frequently used some type of formula with butterfat as the basis in determining these prices.

PRICE METHODS OF SOME INDIVIDUAL COOPERATIVE ASSOCIATIONS

The Connecticut Milk Producers' Association employs a classified plan of sale according to the use made of the milk. The plan provides for four classes, viz: Class 1, all milk sold in fluid form; class 2, milk made into cream that is sold in fluid form; class 3, milk made into manufactured products, except butter; and class 4, milk used in making butter.

Prices of class 1 milk are negotiated for milk containing 4 per cent butterfat. The differential for a change of one-tenth of 1 per cent in butterfat is 4 cents per 100 pounds of milk. Representatives of the producers' association meet with representatives of the distributors each month to determine what prices for the following month shall be. Their prices for class 1 milk may vary from time to time. As long as retail prices remain the same, however, the price of fluid milk to dealers is likely to be established at about the same figure from month to month. During 1926, it was 9½ cents per quart for eight months of the year; 8½ cents, in May and June; and 9¼

cents, in July and August. The retail price for 1927 and 1928 was 16 cents.

Prices for class 2 milk are determined usually at a fixed premium over Boston 92-score butter for the butterfat contained therein. The prices of class 1 milk, per quart, the premium per pound of butterfat in classes 2 and 3, over Boston 92-score butter, the price of butter and the retail price of milk, in Hartford, Conn., are shown in Table 8. The premium above butterfat remains the same for long periods. From May 1, 1925, to September 1, 1928, butterfat in class 2 was paid for at 22½ cents above the Boston 92-score butter market. There was a provision that if the price of butter exceeded 50 cents in any month, this premium was limited to 20 cents. The milk goes with the fat, with no additional allowance for skim milk. Class 3 milk is also sold at a fixed premium over Boston 92-score butter prices. For the last quarter of 1928, this premium was 15 cents per pound of butterfat. Class 4 milk is sold at Boston 92-score butter prices for the fat contained therein.

TABLE 8.—*Milk prices of Connecticut Milk Producers' Association, 1923-1928*

Year and month	Price received for class 1 milk per quart	Premium received per pound of butterfat over Boston 92-score butter		Boston price per pound of 92-score butter, received for butterfat in class 4 milk	Retail-route price of milk per quart at Hartford, Conn.
		Class 2 milk	Class 3 milk		
1923	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
January.....	8.50	25.0	15.0	52.44	15
February.....	8.50	25.0	15.0	50.35	15
March.....	8.50	25.0	15.0	51.11	15
April.....	8.50	25.0	15.0	47.12	15
May.....	8.50	25.0	15.0	42.88	15
June.....	8.50	25.0	15.0	39.98	15
July.....	8.50	27.5	17.5	39.70	15
August.....	8.50	17.5	17.5	44.11	15
September.....	9.25	27.5	17.5	46.44	16
October.....	9.25	27.5	17.5	47.81	16
November.....	9.50	25.0	15.0	51.36	16
December.....	9.50	25.0	15.0	53.44	16
1924					
January.....	9.50	25.0	15.0	53.35	16
February.....	8.50	22.0	12.0	51.73	15
March.....	8.50	22.0	12.0	47.60	15
April.....	8.50	20.0	10.0	39.43	15
May.....	8.50	20.0	10.0	39.19	15
June.....	8.50	20.0	10.0	41.52	15
July.....	8.50	20.0	10.0	40.17	15
August.....	8.50	20.0	10.0	38.60	15
September.....	9.50	20.0	10.0	38.32	16
October.....	9.50	20.0	10.0	38.36	16
November.....	9.50	20.0	10.0	41.59	16
December.....	9.50	20.0	10.0	44.17	16
1925					
January.....	9.50	20.0	10.0	40.69	16
February.....	9.50	20.0	10.0	41.11	16
March.....	9.50	20.0	10.0	47.42	16
April.....	8.50	20.0	10.0	45.30	15
May.....	8.50	22.5	10.0	42.98	15
June.....	8.50	22.5	10.0	43.26	15
July.....	8.50	22.5	10.0	43.54	15
August.....	8.50	22.5	10.0	43.98	15
September.....	9.50	22.5	10.0	47.88	16
October.....	9.50	22.5	10.0	50.60	16
November.....	9.50	22.5	10.0	50.23	16
December.....	9.50	22.5	10.0	49.16	16

TABLE 8.—*Milk prices of Connecticut Milk Producers' Association, 1923-1928—Continued*

Year and month	Price received for class 1 milk per quart	Premium received per pound of butterfat over Boston 92-score butter		Boston price per pound of 92-score butter, received for butterfat in class 4 milk	Retail-route price of milk per quart at Hartford, Conn.
		Class 2 milk	Class 3 milk		
1926	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
January.....	9.50	22.5	10.0	45.25	16
February.....	9.50	22.5	10.0	45.38	16
March.....	9.50	22.5	10.0	43.26	16
April.....	9.50	22.5	10.0	39.96	16
May.....	8.50	22.5	10.0	41.16	16
June.....	8.50	22.5	10.0	41.56	15
July.....	8.50	22.5	10.0	40.88	15
August.....	9.25	22.5	10.0	41.87	16
September.....	9.50	22.5	10.0	44.72	16
October.....	9.50	22.5	10.0	46.55	16
November.....	9.50	22.5	10.0	48.38	16
December.....	9.50	22.5	10.0	53.69	16
1927					
January.....	9.50	22.5	10.0	49.53	16
February.....	9.50	22.5	10.0	51.86	16
March.....	9.50	22.5	10.0	50.95	16
April.....	9.50	22.5	10.0	51.08	16
May.....	9.50	22.5	10.0	43.76	16
June.....	9.50	22.5	10.0	42.62	16
July.....	9.50	22.5	10.0	41.80	16
August.....	9.50	22.5	10.0	42.06	16
September.....	9.50	22.5	10.0	46.24	16
October.....	9.50	22.5	10.0	47.80	16
November.....	9.50	22.5	10.0	48.02	16
December.....	9.50	22.5	10.0	49.85	16
1928					
January.....	9.50	22.5	10.0	48.62	16
February.....	9.50	22.5	10.0	46.93	16
March.....	9.50	22.5	10.0	49.62	16
April.....	9.50	22.5	10.0	46.00	16
May.....	9.50	22.5	10.0	45.38	16
June.....	9.50	22.5	10.0	44.47	16
July.....	9.50	22.5	10.0	45.32	16
August.....	9.50	22.5	10.0	47.12	16
September.....	9.50	27.5	15.0	48.73	16
October.....	9.50	27.5	15.0	47.96	16
November.....	9.50	27.5	15.0	50.15	16
December.....	9.50	27.5	15.0	50.24	16

As long as these premiums are held without change, the prices to producers are likely to remain fairly steady. Fluctuations would be due to varying percentages of the total supply being used in different classes and to changes in the price of butter. Average prices per 100 pounds to producers f. o. b. the market for 4 per cent milk, for the April-March contract years 1922-23, 1923-24, 1924-25, 1925-26, 1926-27, and 1927-28 were \$3.48, \$3.71, \$3.64, \$3.84, \$3.90, and \$4.02, respectively. Increases in prices have been due to higher butter prices, an increase in the proportion of sales as fluid milk, and some to increases in premiums and the price of class 1 milk.

In obtaining the price to the producer, all sales to a given distributor are weighted according to the quantities used in each of the different classes. The weighted average price is the price which producers are paid for milk f. o. b. the market. The result is a pool of the prices received for the milk of all producers shipping to a particular distributor. The sales to another distributor, using different quantities of milk in the different classes, when blended together, may result in a slightly different price to producers who ship to him.

This plan is, then, essentially a series of pools by distributors, the result of which may be a series of prices to producers differing slightly from each other but necessarily rather close together. Members who sell milk to different distributors but who are otherwise under substantially similar circumstances may then receive somewhat different prices.

The Dairymen's League Cooperative Association employs four principal classes in the sale of its milk. These may be modified to some extent from time to time and certain subdivisions made. The following extract relating to classes is taken from a copy of the distributors' contract⁸ of the league used in a given month of 1929:

Class 1

Price \$3.37 per 100 pounds.—For all milk leaving Buyer's herein named plants in fluid form.

(All milk leaving Buyer's plants in fluid form must be reported and paid for in this Class whether sold for resale in fluid form or for ice cream manufacture or any other disposition.)

For all milk made into cream and leaving Buyer's herein named plants in such form of which the skim milk is sold in fluid form.

For all milk utilized in any manner on which prices are not herein established.

For all milk made into cream and leaving Buyer's herein named plants in such forms of which the skim milk is sold for consumption in fluid form, whether or not in combination with other products excepting buttermilk.

Class 2-A

Price \$2.46 per 100 pounds.—For all milk made into cream and leaving Buyer's herein named plants in such form.

If the resulting skim and/or buttermilk is made into or sold as buttermilk, 30 cents per 100 pounds is to be added.

If the resulting skim is used in the manufacture of either ice cream or the cheeses described in Class 3, or skim powder or sweetened skim condensed, homogenized mixture or plain skim condensed, 25 cents per 100 pounds is to be added.

If the resulting skim is either sold to the farmer or made into skim milk cheeses, or casein or milk sugar, or if no profitable disposition is made thereof, 15 cents per 100 pounds is to be added.

Class 2-B

Price \$2.71 per 100 pounds.—For all milk made into plain condensed milk. For all milk used in the manufacture of homogenized mixtures composed entirely of milk products with the addition only of sugar, flavors, gelatin and other binders.

For all milk used in the manufacture of ice cream.

For all milk that is used in the manufacture of cheeses other than those specified by name in this Class and Classes 3 and 4-B.

For all milk used in the manufacture of cheeses of the soft type, such as Cream, Neufchatel, Pimento, Pimento Olive, DeBrie, D'Isigny, Fort DeSalut, Liederkrantz, Lunch, Kosher, Petit Suisse, etc., and Farmers' Pressed Cheese.

For all milk from which only a part of the butterfat is used in the manufacture of butter, and the resultant milk containing some butterfat is used in the manufacture of soft cheeses.

Class 3

Price \$2.40 per 100 pounds.—For all milk that is used in the manufacture of sterilized and evaporated whole milk.

For all milk that is used in the manufacture of sweetened whole condensed milk.

⁸ DAIRYMEN'S LEAGUE CO-OPERATIVE ASSOCIATION, INC., DISTRIBUTORS' CONTRACT, 3 p. 1929. [Mimeographed.]

For all milk that is used in the manufacture of milk chocolate.

For all milk used in the manufacture of whole milk powder.

For all milk used in the manufacture of powdered malted milk.

For all milk to which butterfat is added that is used in the manufacture of milk powder.

For all milk that is used in the manufacture of Swiss, Limberger, Muenster, Pineapple, Edam, Roquefort, Gouda, Camembert, Hard Italian, Brick, and other cheeses of similar type.

If the whey resulting from the manufacturing of cheese covered by Class 3 is made into milk sugar, five cents per 100 pounds shall be added to the prices stated.

Note:—If the milk from which any part of the butterfat is removed and sold in the form of fluid cream is made into sterilized evaporated or sweetened condensed milk, Class 2 price shall apply on milk used.

Class 4-A

Prices.—For surplus milk that is made into butter. Determined as follows:

Take for the months during which the milk is handled, the official New York average outside quotations for 92-score butter, deduct five cents a pound for making, and figure an over-run of 16 per cent.

If the resulting skim and/or buttermilk is made into or sold as buttermilk, 30 cents per 100 pounds is to be added.

If the resulting skim is used in the manufacture of either ice cream or skim powder or sweetened skim condensed or homogenized mixture or plain skim, condensed, 25 cents per 100 pounds is to be added.

If the resulting skim is either sold to the farmer or made into skim milk cheeses, or casein or milk sugar, or if no profitable disposition is made thereof, 15 cents per 100 pounds is to be added.

Any dealer using 50 per cent or less of his receipts in Class 4 shall be allowed 5 cents per pound for making butter, and when he uses over 50 per cent of his total receipts in Class 4 the allowance for making shall be 4 cents per pound.

Class 4-B

For surplus milk that is made into American Cheese.

Take for the month during which the milk is handled the official New York City average price for New York State average run colored and uncolored flats or a price $1\frac{1}{4}$ cents per pound less than the official New York City average price for New York State fresh flats fancy, whichever the seller elects.

The allowance for making cheese under Class 4-B for all dealers who use up to and including 49 per cent of their total receipts in Class 4 shall be at the rate of $3\frac{1}{2}$ cents per pound.

For all those who use 50 to 59 per cent inclusive in Class 4, the allowance for making shall be 3 cents per pound.

For those who use from 60 to 69 per cent inclusive in Class 4, the allowance for making shall be $2\frac{3}{4}$ cents per pound.

For all who use 70 per cent or over, in Class 4, the allowance for making shall be $2\frac{1}{2}$ cents per pound.

Figure according to the test of milk yields per each 100 pounds of milk as follows:

Butterfat test	Cheese yield	Butterfat test	Cheese yield	Butterfat test	Cheese yield
<i>Per cent</i>	<i>Pounds</i>	<i>Per cent</i>	<i>Pounds</i>	<i>Per cent</i>	<i>Pounds</i>
3.0	8.30	4.0	10.60	5.0	12.90
3.1	8.53	4.1	10.83	5.1	13.13
3.2	8.76	4.2	11.06	5.2	13.36
3.3	8.99	4.3	11.29	5.3	13.59
3.4	9.22	4.4	11.52	5.4	13.82
3.5	9.45	4.5	11.74	5.5	14.05
3.6	9.68	4.6	11.98	-----	-----
3.7	9.91	4.7	12.21	-----	-----
3.8	10.14	4.8	12.44	-----	-----
3.9	10.37	4.9	12.67	-----	-----

Disposition of whey.

Prices stated in Class 4-B for milk made into cheese apply when no profitable disposition shall be made of the whey.

If the whey resulting from the manufacture of cheese covered by Class 4-B is made into milk sugar, 5 cents per 100 pounds shall be added to the price stated.

The prices stated are based on delivery of Grade B milk testing, unless otherwise specifically stated, 3.5 per cent of butterfat at railroad points from New York 201-210 miles, both inclusive for Class 1; 201-225 miles, both inclusive for Classes 2-A and 2-B; 201-250 miles, both inclusive for Class 3 from which to New York Interstate rates apply, and at all points at which milk is received from producers for Class 4.

Butterfat.—There shall be a differential of 4 cents per one-tenth of 1 per cent butterfat. Such differential to be added to the base price for all milk testing over 3.5 per cent, and for all milk testing less than 3.5 per cent down to and including milk testing 3 per cent such differential to be deducted from the base price. Such differentials apply to all prices stated in Classes 1 and 3 while the differential to be thus added or deducted for all prices stated in Classes 2-A and 2-B shall be 6 cents per one-tenth of 1 per cent butterfat.

For milk utilized in Classes 4-A and 4-B prices on all milk testing over 3 per cent shall be determined in accordance with schedule of yields shown under Classifications 4-A and 4-B.

The league receives milk, actually handles much of the milk, and pays the producer for all milk whether handled through league plants or those of cooperating distributors. It has actual milk for sale. Its prices for the various classes, based upon the best market information it can secure, are set at such points and with such differentials as the sales committee believes will move the milk. The buyer takes no risk from being unable to use all milk received in a given class, but pays the class price for the quantity utilized in each class.

The Maryland State Dairymen's Association makes its sales on a plan that employs only two classes: (1) Fluid and (2) surplus. Most of its surplus is used as sweet cream either for table use or ice cream. The price of class 1 or fluid milk is determined by agreement in conference of distributors and the producers' association. Once a price is agreed upon no conference is held regularly, but the price is continued until the distributors or producers request a price conference. The price of fluid milk was kept without change at 31 cents a gallon from January 1, 1924, to October, 1926. In October, 1926, this price was increased to 33 cents a gallon, or \$3.83 per 100 pounds. The management states that as long as present conditions obtain no change is contemplated. The retail price for bottled milk delivered to the family trade was 14 cents a quart. Prices are made on a basis of 4 per cent milk, which is reported as about the average test. A differential of one-half cent a gallon or 5.8 cents per 100 pounds is applied for variations of each one-tenth per cent in butterfat above or below 4 per cent.

The price of class 2 milk is based on the price of New York 92-score butter and the price of class 1 milk, according to a definite formula. As long as there is no change in the price of class 1 milk, it is necessary only to ascertain the average price of New York 92-score butter. The only regular meetings to consider the price of milk are those of the committee which meets on the 27th of each month to verify the average price of New York 92-score butter for the last 30 days.

Class 2 milk is sold to the distributors on the basis of butterfat in the milk and the price of fluid milk, by taking a differential below

the price of fluid milk. The surplus price is thus automatically determined by current prices for fluid milk and the New York butter prices.

The Maryland and Virginia Milk Producers' Association, of Washington, D. C., sells milk on the same plan as the Maryland State Dairymen's Association. Prices are calculated on the basis of 4 per cent milk, but the differential is 6 cents per point, or per one-tenth per cent change in butterfat content. Distributors also pay certain premiums for various barn and cattle scores, which on an average, amount to approximately 23 cents per 100 pounds. In the original basic surplus plan of sale, as now employed by the Inter-State Milk Producers' Association of Philadelphia, the distributor takes all the risk resulting from the fact that the basic milk production of his shippers may not be in exact agreement with his fluid requirements; that is, he pays his producers basic prices for any milk up to the producers' established basic quantity. If he has to manufacture some of this milk he probably suffers some loss. On the other hand, if his fluid requirements are in excess of basic milk, he can bottle some of his surplus milk and secure any resulting gain.

Prices for basic milk are determined by a conference between distributors and the producers' association. Changes are considered only when one or the other side requests a conference for that purpose. Usually changes in the basic price are infrequent and distributors have adopted a policy of no seasonal changes in retail prices. Basic prices are determined on the basis of 4 per cent milk, f. o. b. the market, with a differential addition or deduction of 4 cents per 100 pounds for each change of one-tenth per cent in butterfat content. If milk is handled by the distributor through a receiving station, the producer pays a handling charge of $23\frac{1}{2}$ cents per 100 pounds in addition to the freight.

Prices of first-surplus milk are determined by formula, according to the butterfat content of the milk and New York 92-score butter prices. The price per 100 pounds is the butterfat content multiplied by the monthly average New York 92-score butter price, plus 20 per cent. For the second surplus, the price per 100 pounds is the butterfat content of the milk multiplied by the average monthly price of New York 92-score butter. These prices are for surplus milk f. o. b. Philadelphia. At receiving stations, the price is 57 cents per 100 pounds less, which allows the dealer a handling charge of 23.5 cents per 100 pounds and the freight from the 51-60 mile zone of 34.5 cents per 100 pounds. No further freight allowance is made, and the distributor, therefore, pays the producers the same price for surplus milk at all receiving stations.

The Dairymen's Cooperative Sales Co. of Pittsburgh employs a classification plan in making sales to the distributors, paying according to the use made of the milk. The five classes employed are: (1) Milk used in fluid form, (2) milk used for cream, (3) milk used in making butter, (4) milk used in making cheese, (5) milk used in evaporated and condensed milk. Prices for fluid or class-1 milk (3.5 per cent basis) are arranged by agreement in a conference of producers, consumers, and the distributors. Prices for class 2 or cream are based on prices of western cream or of outside supplies. Milk used for butter (class 3) at country plants is paid for according to the

butterfat contained therein at 15 per cent above the average monthly quotations of Chicago 92-score butter. All overrun over 15 per cent and the skim milk are allowed against the cost of manufacture. Prices for class 4 (milk used for cheese) are determined on the basis of the daily average New York quotation for American cheese white flats, less 3 cents per pound, as manufacturing expense, on the basis of a yield of 9.41 pounds of cheese equaling 100 pounds of 3.5 per cent milk. Prices of class 5 milk are charged to the buyer on the basis of prices determined by the conference board of midwestern condenseries.

Essentially the whole plan depends upon the establishment of prices of fluid milk based on retail prices and the prices of manufactured products. The prices of the latter are based directly on national prices for these products. The practice of having the consumer represented in price conferences in Pittsburgh is a practice not common to most other markets.

The New England Milk Producers' Association makes its sales on a classification plan, using two classes: (1) All milk used in fluid form; (2) all milk in excess of this quantity. Class 2 is further subdivided into (*a*) milk used for cream and (*b*) all other milk. The price of class 1 milk is determined monthly by conference between the distributors and the New England Milk Producers' Association. The quantity of milk sold in class 1 is determined by actual record. However, the quantities that are used for cream and for other purposes are estimates of the proportions that will be used for each purpose. These proportions are determined in conference in advance. In months when production is lowest, as in the last three months of the year, 100 per cent of this surplus may be allowed in the cream class. In other months the proportion may be 75-25; that is, 75 per cent of the surplus in the (*a*) or cream class and 25 per cent in the (*b*) or other-use class. In the summer months, the percentage allowed in the cream class may be low, and the surplus may be paid for on a 10-90 basis.

Prices for the cream or (*a*) class of surplus are determined by taking the average butterfat content, multiplied by the average price of Boston 92-score butter for the month, plus 20 per cent. Prices for (*b*) class surplus are determined by taking the average monthly 92-score Boston butter price, minus 5 cents for manufacturing cost, plus $16\frac{2}{3}$ per cent allowance for gain in overrun.

The Michigan Milk Producers' Association initiated a plan of sale in Detroit on August 1, 1928, which differs somewhat from the usual plan. Milk is divided into two classes—(1) fluid and (2) surplus. The price of fluid milk in Detroit has remained at \$3 per 100 pounds for a considerable period of time. It was the aim to keep this price about constant. The plan does not take into consideration changes in butter prices, but varies only with the quantity of surplus produced each month. No definite period of time has been set for the continuance of the plan; presumably it may be changed whenever it appears inequitable to producers or distributors. This may depend on whether or not retail milk prices, butter prices, and cream prices, for any year, remain around the present levels.

The plan provides for a variation in price according to the fluctuation in the sales of fluid milk and the quantity of milk that

has to go into the surplus class. It places a minimum of \$2.60 per 100 pounds on all 3.5 per cent milk, f. o. b. Detroit. This plan is, in effect, a series of flat prices varying according to the quantity of surplus. The butterfat differential for each one-tenth of 1 per cent variation in butterfat content is 4 cents per 100 pounds, when 92-score butter prices are below 45 cents, and 5 cents when they are above that point. The following schedule gives the prices which distributors pay for milk containing 3.5 per cent butterfat, with varying proportions of surplus:

Schedule of prices paid by producers for fluid milk f. o. b. Detroit, with varying percentages of surplus

Percentage of surplus	Price per 100 pounds	Percentage of surplus	Price per 100 pounds	Percentage of surplus	Price per 100 pounds
10.....	\$2.95	20.....	\$2.85	30.....	\$2.72½
11.....	2.94	21.....	2.84	31.....	2.71
12.....	2.93	22.....	2.83	32.....	2.69½
13.....	2.92	23.....	2.82	33.....	2.68
14.....	2.91	24.....	2.81	34.....	2.66
15.....	2.90	25.....	2.80	35.....	2.65
16.....	2.89	26.....	2.78½	36.....	2.63½
17.....	2.88	27.....	2.77	37.....	2.62
18.....	2.87	28.....	2.75½	38.....	2.60
19.....	2.86	29.....	2.74		

¹ The minimum price shall be \$2.60 for 3.5 per cent milk, f. o. b. Detroit, regardless of the quantity of surplus.

The Illinois Milk Producers' Association of Peoria, Ill., make their contracts with the distributors for an entire year in advance. For the year 1929, the distributors agreed to pay the association \$2.77 per 100 pounds for 3.5 per cent milk f. o. b. the market for all milk sold as fluid milk or table cream. For that portion of the milk used for making butter, cheese, ice-cream mix, and other products, the price is to be on the basis of the butterfat content at a premium of 4 cents above the average 92-score price of butter in Chicago plus an allowance of 30 cents per 100 pounds for the skim milk. The fat differential for class 1 milk is 4 cents per 100 pounds, either up or down from 3.5 per cent for each variation of one-tenth per cent in butterfat. The returns are pooled so that each producer gets the same price f. o. b. the market for milk of similar fat content and quality. A premium above the pool price is paid for quality, determined by a methylene blue test. Each member's milk is tested five times each month with the methylene blue test, and each time the milk passes the standard set for the test the member receives a premium of 5 cents per 100 pounds for his milk during that month. If the milk passes all five tests, the price paid is 25 cents per 100 pounds above the pool price. Nonmembers do not receive the premiums.

Associations such as the Twin City Milk Producers Association, located in a large-surplus section, must necessarily keep their fluid prices near the price distributors can pay for milk for manufacture. Since they manufacture most of the surplus received, the returns they receive from this milk must depend upon the prices they can obtain for their products. Fluid-milk prices are then just enough above the returns for manufactured milk to approximately cover all

the producer's excess costs, above the cost of producing milk for manufacture.

SOME REPRESENTATIVE ASSOCIATIONS

The cooperative associations described in the following pages are representative of some features which may be common to a number of such organizations or to the particular association only, but which have been a contributing factor in the successful operation of the association. They may serve to illustrate more clearly the methods of operation of cooperative fluid-milk associations in the United States.

DAIRYMEN'S LEAGUE COOPERATIVE ASSOCIATION (INC.)

The Dairymen's League Cooperative Association (Inc.) may be taken as representative of the large operating-marketing type of association. It is, in fact, the largest of the fluid-milk marketing cooperatives. Its sales for the fiscal year ended March 31, 1929, amounted to over \$85,000,000. The volume of milk pooled, sales, and average number of shippers during each year from 1922 to 1929 are shown in Table 9. Its producers are located throughout the State of New York, in western Connecticut, Massachusetts, Vermont, and northern New Jersey and Pennsylvania. Some milk is shipped slightly more than 400 miles. In March, 1929, the league was operating 238 plants. During that year approximately 40 per cent of its milk was handled through plants operated by the league and the remainder through plants operated by distributors who were obtaining their milk supply through the league.

This association supplies milk not only to distributors in New York City but to those in other cities of the State, including Buffalo, Rochester, and Albany, and to those in cities of northern Pennsylvania and New Jersey. Its aim is to operate as a wholesaler only. Occasionally it purchases a retail business in order to provide an outlet for fluid milk, but its policy has been to sell such a business as soon as it can find a favorable purchaser.

TABLE 9.—*Volume of business transacted by the Dairymen's League Cooperative Association (Inc.), 1922-1929*

Year ended Mar. 31—	Milk handled—			Percentage of milk handled in league plants	Value of milk sold
	In league plants	In distributors' plants	Total		
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Per cent</i>	<i>Dollars</i>
1922	391, 167, 452	2, 174, 309, 353	2, 565, 476, 805	15. 2	61, 943, 832
1923	793, 040, 638	2, 566, 232, 720	3, 359, 273, 358	23. 6	82, 130, 902
1924	720, 331, 348	1, 957, 100, 130	2, 677, 431, 478	26. 9	75, 132, 468
1925	731, 918, 516	1, 627, 023, 390	2, 358, 941, 906	31. 0	65, 048, 895
1926	694, 781, 474	1, 575, 745, 366	2, 270, 526, 840	30. 6	66, 632, 884
1927	739, 334, 117	1, 484, 885, 949	2, 224, 220, 066	33. 2	73, 716, 900
1928	861, 089, 526	1, 559, 295, 059	2, 420, 384, 585	35. 6	82, 501, 310
1929	975, 941, 406	1, 509, 000, 333	2, 484, 941, 739	39. 3	85, 648, 162

The league maintains a more elaborate field organization than does any of the other fluid-milk organizations. It has a directorate of 24, elected for 3-year terms, 1 from each district into which the ter-

ritory is divided roughly on the basis of production. These districts may be divided into subdistricts, but no subdivision is made if it results in a subdistrict having less than 400 members. All director's districts, and the subdistricts follow county lines. Each subdistrict has a president, who may be either the director of the district or a member elected as the subdistrict president. In the latter case, this subdistrict president attends directors' meetings, but has no vote.

Each subdistrict is composed of a number of locals that are incorporated under laws provided by the States for this purpose. Each local is a separate and distinct corporation having officers and directors who are elected annually. There were approximately 800 locals in the league in August, 1928.

After every directors' meeting, delegates from each local attend a subdistrict meeting to receive a report of the last directors' meeting. These delegates, in turn, go back to their locals with a report of the subdistrict meeting.

Subdistricts and locals are financed through the central organization; a deduction of 1 mill per 100 pounds on all milk pooled is made for the subdistrict and 2 mills for the local.

The territory is also covered by about 15 division offices, located at strategic points, each in charge of a man who is the direct representative of the league. These offices serve as clearing houses for the members regarding the association's problems.

The outstanding duties of these offices are to see that every eligible member is kept in the association, to increase the membership through obtaining new members, to obtain signatures to orders on distributors when diversions or transfers take place. The man in charge supervises and acts as the detail man on hauling, looks after the convenience of members in transferring from one plant to another, considers complaints regarding weights, tests, and misunderstandings on checks. He sees that distributors report promptly and assists them in any way possible. He assists the directors and subdistrict presidents with respect to meetings and general relationship with members. He obtains information requested by department heads with respect to country conditions. The division representative makes the direct contact with the membership, distributors, and the public, but his principal service is to the members in whatever manner required by local conditions.

The management of the association is vested in an executive committee of five, elected from the directors, of which the president is ex officio chairman.

The total cost of administrative expenses and selling expenses averaged 6 cents per 100 pounds for the year ended March 31, 1928, and the average for the years 1922-1928 was 6.8 cents per 100 pounds.

The association recognizes the right of each member to receive the same price for his milk as is paid to each other member under substantially similar circumstances without regard to the use made of the milk. The receipts from the sale of all milk produced by members, whether handled through league or distributors' plants, are pooled, and each member is paid by check direct from the association, according to the quantity of milk which he delivered during that month. Checks are mailed about the 25th of the month for deliveries during the previous month. At present approximately 40

per cent of the milk handled passes through plants operated by the league. Table 10 shows the quantity of milk handled by the league plants, the number of plants operated by the league in March of each year, and the number of members shipping at that time.

TABLE 10.—*Milk handled through plants operated by the Dairymen's League Cooperative Association (Inc.), 1922-1929*

Year ended Mar. 31	Milk handled	Plants operated by the league on Mar. 31	Members shipping in March	Year ended Mar. 31	Milk handled	Plants operated by the league on Mar. 31	Members shipping in March
	<i>Pounds</i>	<i>Number</i>	<i>Number</i>		<i>Pounds</i>	<i>Number</i>	<i>Number</i>
1922-----	391, 167, 452	84	42, 562	1926-----	694, 781, 474	169	33, 170
1923-----	793, 040, 638	118	45, 715	1927-----	739, 334, 117	184	30, 792
1924-----	720, 331, 348	140	36, 858	1928-----	861, 089, 526	218	34, 755
1925-----	731, 918, 516	160	30, 805	1929-----	975, 941, 406	238	36, 952

It is the present policy of the league to confine its activities to the handling and sale of fluid milk as much as possible and to manufacture surplus only when it is found more economical to do so. By operating a large number of country plants and maintaining equipment and personnel so that milk could be manufactured if necessary, it believes that it can maintain a key position in the industry and so can obtain a price justified by market conditions. In case any large distributor should discontinue buying league milk, the association could take care of the supply until further sales arrangements could be made. Because of the country receiving stations the distributors lack direct contact with producers so it would be relatively difficult for them to obtain a supply quickly.

The milk received is sold to distributors on the classified plan; the price is based upon the use made of the milk.

Minor changes in classification are made from time to time, but the following four classes are those usually employed: Class 1, fluid milk and milk skimmed for fluid cream; class 2, cream, plus skim charges, ice cream, homogenized soft cheese, such as cream Neuf-chatel, Pimento Olive, De Brie, D'Isigny, Fort De Salut, Liederkranz Lunch, Kosher, and Farmers' Pressed Cheese; class 3, evaporated and condensed milk, milk chocolate, whole-milk powder, and hard cheeses, such as Swiss, Limburger, Muenster, Pineapple, Edam, Roquefort, Gauda, Camembert Hart Italian, and Brick; and class 4, butter, with skim charges, and American cheese.

For the year ended March 31, 1928, 57.75 per cent of all milk handled through both distributors' and association plants was sold in class 1; and 22.03 per cent in class 2.

The net pool price is the total amount received by the league less any deductions for expenses. The price to the individual producer is the net pool price with adjustment for differences in transportation costs, butterfat, quality, and other factors.

The Dairymen's League Cooperative Association (Inc.) is a non-stock corporation and is financed by means of a revolving fund obtained by deductions from the membership. The deductions are made from the members' checks each month and, at the end of the fiscal year, a certificate of indebtedness is issued to the member for

the total amount deducted during the year. These certificates bear interest at the rate of 6 per cent and mature five years from their date of issue. Each certificate has five coupons attached to it representing the amount of money due each year. In appearance it is similar to a coupon bond. Under terms of the association's charter, funds obtained in this manner may be used for the acquisition and equipment of plants, or for other property essential to the marketing of milk and milk products, and to provide funds for working capital. The average gross pool prices, administration and sales expense, and deductions for capital purposes for the years 1922 to 1928 are given in Table 11.

TABLE 11.—*Dairymen's League Cooperative Association (Inc.): Prices to producers f. o. b. New York City and deductions from producers' returns, 1922-1929*

Year ended Mar. 31	Average gross pool price 3.5 milk f. o. b. New York City	Average deductions for expense	Net pool price to producers for 3.5 milk f. o. b. New York City	Average deductions for certificates of indebtedness
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
1922-----	2.7400	0.0500	2.6900	0.1680
1923-----	2.6300	.0695	2.5605	.1376
1924-----	2.8300	.0871	2.7429	.0957
1925-----	2.6279	.0832	2.5447	.0747
1926-----	2.9189	.0669	2.8520	.1000
1927-----	3.0040	.0620	2.9420	.1120
1928-----	3.1390	.0600	3.0790	.1110
1929-----	3.1836	.0600	3.1236	.1163

MARYLAND STATE DAIRYMEN'S ASSOCIATION

The Maryland State Dairymen's Association has played an important rôle in the development of cooperative marketing of fluid milk. The things for which it is particularly noted are its use of the basic surplus plan for production control and the combination of this plan with the use plan, by which distributors pay for milk on the basis of its use while the producer is paid according to his basic and surplus production. It has attracted considerable attention, because of the accumulation of a contingency reserve fund adequate to insure a market-reflecting demand and supply for the producers' milk at any time and to guarantee that the producer will receive payment for all milk delivered, regardless of the financial status of the distributors.

The association is a nonstock corporation operating in Baltimore and Annapolis, Md. It has always functioned as a bargaining association. A membership fee of \$1 is charged upon joining the association. The member is required to sign a demand note to the extent of \$1 per cow, with a minimum of \$15 if his herd is less than 15 cows. The brokerage commission charged for selling milk is 1 cent per gallon or 11.6 cents per 100 pounds for milk delivered direct to market. For that delivered to receiving stations, the association's commission is one-half cent per gallon or 5.8 cents per 100 pounds. Producers delivering to country points pay 2 cents per gallon or 23.2 cents per 100 pounds, cooling charge, and producers

shipping their milk direct to the market pay a can-washing charge of one-fifth cent per gallon or 2.32 cents per 100 pounds.

An allowance of one-fifth cent per gallon, or 2.32 cents per 100 pounds is made for current operating expenses, of which the association has never used all, and the remainder is placed in a contingency reserve.

The association guarantees the producer a market for all his milk all of the time. It arranges the terms of sale and prices to the producer and guarantees the financial responsibility of any distributor to whom it sells milk. It requires the distributor to give bond, but assumes responsibility for payment to the producer in case he should not be paid at the proper time by the distributor. Testing is done by a disinterested agency on a contract at a given rate per sample, and both distributors and producers accept these tests and share in the cost of testing.

This association, reorganized late in 1918, has grown from a membership of about 450 to more than 4,000, at the present time. For the fiscal year ended July 31, 1928, it handled 222,738,972 pounds of milk, for which it received \$8,161,257 or an average of \$3.66 per 100 pounds. The maximum distance from which milk is brought to market will not exceed 75 miles.

It was one of the pioneers in a plan for production control. It employs the so-called basic surplus plan, which has been adopted in a number of markets since it was put into use in Baltimore. From 1918 to 1923, the plan in use was similar to the one employed by the Inter-State Milk Producers' Association of Philadelphia. Since that time, a number of interesting modifications have been made.

When the plan was put into effect in 1918, the three months of October, November, and December were taken as the basic period. Each producer's basic quantity was established for the following nine months, and payment was made on the basis of this basic quantity, described for the Philadelphia milk shed. The farmer made a new average each fall, and the distributors purchased basic and surplus milk as produced. The distributors assumed the risks arising from the fact that basic purchases might exceed the fluid sales while they received whatever benefit might accrue from using surplus milk for fluid purposes. It had been the aim of the association to develop a seasonal variation in production which would be more nearly in accord with actual consumption. The sales of fluid milk are fairly constant from month to month; usually they do not vary more than 10 per cent from the low month, which occurs some time during the winter—January perhaps—to the high month, which is probably in the summer or early fall. In Baltimore, the high month has occurred most often in October.

Before the initiation of the basic surplus plan the peak of production ordinarily came in May or June and the low point in November or December. After four to five years of operation, a low point began to appear in the late spring months (about April) and another in midsummer following the pasture season. In 1923 this condition was further accentuated with low-production periods appearing about the same time as during the previous year. The management of the association saw that, if it continued the plan then

in operation, it would have no better adjustment between production and sales than before the plan was initiated. The producers had reacted too far to the price stimulus, and the pendulum had swung the other way. Since by the arrangement of the plan all milk produced during October, November, or December was to be paid for at basic prices, the distributors now found themselves facing the problem of paying basic prices for milk which went into surplus uses. The only method that could be followed if the association were to continue the plan was to give the distributors a lower price on basic milk. It did not want to do this, and the distributors were insistent on some other basis of purchasing their milk, as the system was obviously unfair to them under conditions existing at that time.

Beginning January 1, 1924, the association put into effect a modification of the plan which they hoped would correct the situation and especially the large averages in the fall of 1923. The farmer was told that he would be given a basic quantity equal to that established during 1922, which was about equal to fluid sales. Production decreased immediately, and in April they were allowed to use the 1923 fall averages instead of 1922. Production increased and was still so high by September that the association found it necessary to put them back on the 1922 averages, which was continued until the end of the year. Beginning January 1, 1925, each producer was allowed a basic quantity equal to the 3-year averages of his basic quantities for 1921, 1922, and 1923. The total basic milk thus allotted was in rather close agreement with fluid sales at that time. Shippers coming in after January 1 and before October of any year were to be admitted on a 50-50 basis. After October 1 they were to be allowed a 70-30 basis; that is, 70 per cent basic and 30 per cent surplus. After January 1 they were to be allowed a basic quantity equal to 70 per cent of the fall production of the previous year.

The use of the 1921, 1922, and 1923 fall averages as a basis for establishing individual basic quantities is still in effect, but there have been some modifications for new shippers and for old shippers who fail to maintain these averages during the three fall months.

The following are the periods employed for establishing the farmers' basic quantities since 1918:

January 1, 1919, to January 1, 1924; average production for October, November, and December of the previous year.

January 1, 1924, to April 1, 1924; average production in October, November, and December, 1922.

April 1, 1924, to September 1, 1924; average production in October, November, and December, 1923.

September 1, 1924, to December 31, 1924; average production in October, November, and December, 1922.

January 1, 1925, to December 31, 1928; average production in October, November, and December, 1921, 1922, 1923.

For 1927, any member who failed to maintain 80 per cent of his established basic, during October, November, and December, 1926, was automatically given such new average as he did maintain as his new basic quantity. For 1928, unless the producer produced 90

per cent of the old average, he was given the new one and, for 1929, this requirement was raised to 100 per cent. The following letter given out by the Maryland State Dairymen's Association on August 1, 1928, defines the policy for 1929:

MARYLAND STATE DAIRYMEN'S ASSOCIATION,

August 1, 1928.

The Maryland State Dairymen's Association will continue the use of the present fall averages as a basis for fluid-milk sales during 1929, with the following exceptions:

1. Any member producer who does not produce in October, November, and December, 1928, at least 100 per cent of his present basic average will lose his present average on January 1, 1929, and be credited with an average based on his actual production in October, November, and December, 1928.

2. All new shippers who began shipping milk on this market after November 1, 1927, and prior to January 1, 1928, and are now being paid on a 50-50 per cent basis, will continue on that basis after October 1, 1928, unless market conditions warrant additional basic milk.

3. All new shippers who began shipping after January 1, 1928, and are now being paid on a 40-60 per cent basis will on October 1, 1928, be paid on a 50-50 per cent basis, unless market conditions warrant additional basic milk.

4. Any producer now on this market, or who begins shipping milk prior to October 1, 1928, and who fails to produce and ship milk during the entire three fall months, will be credited with an average based on the 3-month period.

5. Any producer now on this market, or who begins shipping milk prior to October 1, 1928, and who produces no milk during the fall months from which an average can be taken, then comes on the market again the following year, will be paid surplus price for all his milk until the following October 1.

6. When any shipper sells his cows and ceases to ship milk, then within one year resumes his shipments, he will receive surplus price for all his milk until the following October 1.

7. If, on January 1, 1929, it is found, after all shippers have been credited with the quantity of basic milk as above specified, and this amount is less than the fluid consumption in Baltimore, then the shippers who had the highest per cent of surplus during October, November, and December, 1928, will be credited with any additional basic milk then not allocated.

The above policy was adopted by the Board of Directors at their last meeting, and, we believe, is the only policy whereby we can continue to market unlimited production of milk and maintain our present basic and surplus prices.

Under this plan some producers who failed to keep up their fall production would be given a lower basic quantity than originally established, at which time basic milk and fluid were approximately equal. This fact, together with natural increases in fluid sales, would tend to make the total quantity of basic milk less than fluid sales. To correct this, members who produce in excess of their established basic quantity during October, November, and December of any year are allotted a pro rata share in this excess of fluid sales over basic supplies. Also, in past years, a certain amount of this excess has been allotted to new shippers who began during the year. At present, there is no assurance that the new shipper will secure better than a 40-60 basis for the future, though, if there is additional basic milk to be allotted, he may receive some share in it.

Under the plan as set up at the present time, the producer is penalized for any highly seasonal variation in production and may be particularly so for failure to maintain production during the last quarter of the year.

The demand for fluid milk and cream has been growing rapidly, and there has been no necessity to curtail total production so long as producers are receiving prices that will give them an adequate

return. Under present conditions prices of fluid milk are remaining constant and, under the plan, no other producer can take this portion of the fluid market away from the old producer as long as he maintains his supply for fluid use. The old producer who wishes to expand can do so if his costs are low enough to enable him to produce milk largely at surplus prices. Likewise the new producer can enter the field if he can afford to produce 60 per cent of his milk for surplus prices which have been well maintained during the last two years. During May and June of 1928 the surplus amounted to 73 per cent, yet the surplus price for 4 per cent milk was \$2.90 per 100 pounds.

Although farmers are paid on the basis of their basic and surplus production in accordance with the plan described above, distributors make their purchases on a classification basis according to use. A twofold classification is employed: (1) All milk for fluid use and (2) all other milk. The first class is usually spoken of as fluid milk and the second as surplus. Practically all of the surplus is used as table cream or for ice cream. Any change in prices or any discussion of proposed changes in price is arranged in a conference between distributors and the association. The management states that there has been only one price conference and only one price change that has not been automatically taken care of since February, 1923. That price change took place on October 1, 1926, when the fluid price was raised from 31 to 33 cents per gallon or from \$3.60 to \$3.83 per 100 pounds for 4 per cent milk f. o. b. the market. Basic prices are always the same as fluid prices.

During 1928 and 1929, with no factor to cause any significant change in demand and with production regulated as it has been, it has been the opinion of the management that more money could be returned to the producers if both fluid prices and distributors' retail prices were kept the same throughout the year. For that reason retail prices have been kept at 14 cents per quart, with fluid prices at \$3.83 per 100 pounds since the last price change on October 1, 1926.

The price of surplus milk (class 2) is determined by formula with the price of New York 92-score butter and the agreed price of fluid milk as a basis. The differential between fluid and surplus milk of 4 per cent butterfat content is taken as the fluid price less 50 per cent of the difference between the fluid price and the monthly average price of New York 92-score butter plus 20 per cent, in all months except May and June, in which a differential of 60 per cent is taken instead of 50 per cent. That is, the fluid price (which is also the basic price) minus 50 per cent (fluid price minus four times New York 92-score butter price plus 20 per cent) equals the surplus price for any month except May or June. To illustrate, assume the price of fluid milk in April to be \$3.80 per 100 pounds for 4 per cent milk and the price of New York 92-score butter to be 50 cents per pound during that month, then:

$$\$3.80 - 0.50 (\$3.80 - 4 [\$0.50 + \$0.20 \times \$0.50]) = \text{surplus price.}$$

$$\$3.80 - 0.50 (\$3.80 - 4 \times \$0.60) = \text{surplus price.}$$

$$\$3.80 - 0.50 (\$3.80 - \$2.40) = \$3.80 - (\$0.50 \times \$1.40) = \$3.80 - \$0.70 = \$3.10 \text{ per 100 pounds for surplus price.}$$

If the month had been June instead of April, the price would have been $\$3.80 - 0.60 (\$1.40) = \$3.80 - \$0.84 = \$2.96$ per 100 pounds.

Unless this surplus price to distributors is increased by agreement of distributors and the association, it will be also the farm surplus price. In addition to the payment of the agreed price for class 1, or fluid milk, each distributor pays into a so-called basic sales adjustment fund three-fourths of a cent per gallon. Farmers are paid by the distributors on a basic surplus plan; that is, for his basic quantity, the producer is paid the basic price, and for all in excess of this quantity he receives the farm surplus price.

If a distributor finds that he has paid for more basic milk than he has been able to sell as fluid and it has thus been necessary for him to turn some of the basic into surplus uses, he is paid from the basic sales adjustment fund the difference between what he paid the producer on the basic surplus plan, and what he would have paid had he purchased it from him and paid according to the quantities used for fluid and surplus. Then if some of the milk for which the farmer is paid surplus prices is sold for fluid use, the distributor pays into the basic sales adjustment fund the difference between what he paid for the milk as surplus and what he would have paid for it as fluid milk; that is, basic milk multiplied by basic price, plus farm surplus milk, multiplied by farm surplus price, must equal fluid milk multiplied by fluid price, plus three-fourths cent per gallon, plus surplus milk, multiplied by surplus price, for the market as a whole over a period of time.

In order that the payment into the basic sales adjustment fund may not have to be more than three-fourths cent per gallon or that the fund may not be increased to any great extent, basic must be kept approximately equal to fluid sales. The management of the association has done this. Their policy has been such that the size of the basic sales adjustment fund has tended to increase rather than decrease. The association has employed a part of this increase to increase the farm surplus price. This has been done by agreement of association and distributors at a time of the year when it was desired to stimulate production. In such a case the farm surplus price would be found slightly higher than the surplus price paid by distributors.

As a matter of actually making payments, the distributors, on agreement with the association, pay to the farmers for surplus a price higher than the formula surplus price, and the adjustment is made with each distributor's account in the basic sales adjustment fund, only as a bookkeeping transaction, no money in any case actually being paid into or taken out of the fund. A schematic arrangement of the plan of payment to producers of the Maryland State Dairymen's Association is shown in Figure 10.

The contingency reserve fund is that set aside out of brokerage fees in excess of one-fifth of a cent per gallon. On about one-half the milk which is shipped direct, this amounts to approximately $9\frac{1}{2}$ cents per 100 pounds and, on that passing through country stations, about 3.5 cents per 100 pounds. This brokerage scale has been in effect since 1921, and a careful record has been kept of each member's contribution to the fund. No interest is paid members on their contributions. It is the belief of the management that a permanent fund of about \$500,000 is adequate. In 1927 this fund had reached \$700,000 and, although deductions continue to be made,

those contributing in 1921 were repaid their share of the fund. In 1928 those making payments in 1922 were given refunds. In this manner, the fund is maintained, and the burden of its maintenance is placed largely on those actively engaged in dairying at a given time.

THE INTER-STATE MILK PRODUCERS' ASSOCIATION

The Inter-State Milk Producers' Association, which operates in Philadelphia and a number of secondary markets in that milk shed, has been one of the outstanding examples of the successful employment of the basic surplus plan of equalizing production. Without any protective policy on the part of the State or city health departments, it has succeeded in maintaining its association and has established its own efficient sanitary inspection system.

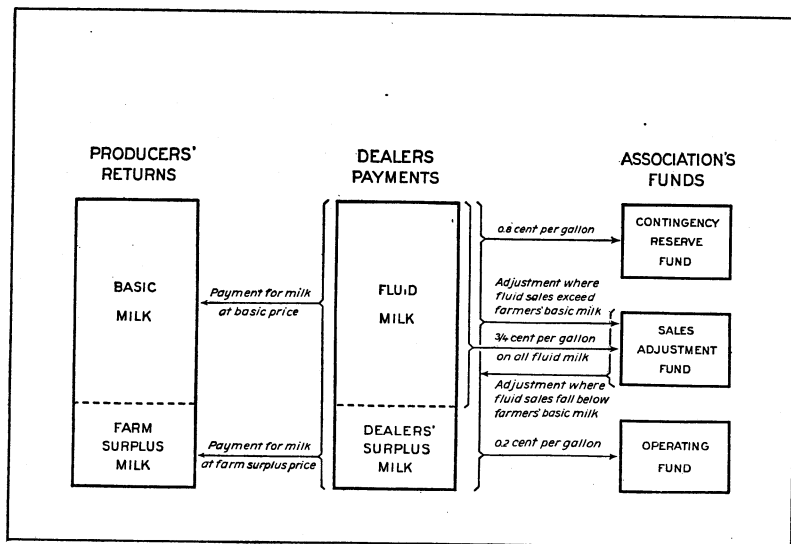


FIGURE 10.—PLAN OF PAYMENT TO PRODUCERS, MARYLAND STATE DAIRY-MEN'S ASSOCIATION, 1929

This is a combination of the basic surplus and use plans. The producer receives payment according to his basic and farm surplus production. The distributor pays according to the quantities employed in fluid and surplus uses.

The association secures milk from Pennsylvania, a distance of some 400 miles west and 75 miles north of Philadelphia, from the entire State of Delaware, the Eastern Shore and parts of northern and western Maryland, northeastern West Virginia, and the southern half of New Jersey. The milk shed may be classed as a deficit area so far as supplying milk and cream to the Philadelphia market. It furnishes all of the fluid milk and a part of the cream, but large quantities of cream are received in that market from points west of Pennsylvania. There is little in the way of sanitary restrictions under city ordinances that prevents any quality of cream from coming into that market.

The Inter-State Milk Producers' Association operates purely as a cooperative bargaining organization. It operates no facilities for

the physical handling of milk and confines its activities to negotiation and adjustment of price agreements, check testing of members' milk for butterfat, settlements with buyers for errors, and shortages in payment for milk. It does not assume liability for payment for milk, in case the distributor fails or for any reason does not pay the producer, although it makes every effort to collect money due the member and to designate only financially reliable distributors to whom its members should ship. Through its close affiliation with the Philadelphia Inter-State Dairy Council, it carries on an educational campaign to increase milk consumption, and provides for quality improvement through a sanitary inspection system in which all members must have their farms inspected and receive a permit before they can ship milk. It maintains a statistical department for the collection and analysis of information relative to market conditions, costs, and the business of the association. Through its editorial department it publishes the Milk Producers' Review, through which it disseminates the information to its membership.

The association was incorporated in its present form on March 14, 1917. Due to the fact that there was no cooperative law in Pennsylvania at that time, the association was incorporated as a stock company under the laws of Delaware. Its charter provided for an issue of \$100,000 of capital stock, divided into 40,000 shares with a par value of \$2.50 per share. Each member is required to subscribe for stock on the basis of one-tenth share for each cow owned, with a minimum holding of four-tenths of a share. This plan of distribution causes the stock to be held in an approximately similar proportion to production. Each member has the right to vote in person or by proxy according to the number of shares of capital stock held. In fact each local, of which there are 287 in the association, ordinarily elects a delegate to represent it at the annual meeting, and this delegate, as a rule, votes the proxies of most of the members of the local.

The local associations of the Inter-State Milk Producers' Association have no legal status, and the member contracts for the sale of milk are direct with the parent association. The local units are organized, however, for the purpose of handling local problems and for gathering the membership together for the dissemination of market information and the election of delegates to the annual meeting of the Inter-State Milk Producers' Association, who will represent them and vote their proxies at this meeting. The association's business is under the control of 24 directors elected for a 3-year term, one-third being elected each year, who meet every two months, and an executive committee of 7 who meet as frequently as necessary.

The association has shown a steady growth since it began operations, in 1917. The number of members reported, together with the number of locals into which the membership is divided, is shown in Table 12. During their fiscal year, ended October 31, 1928, the association sold for its members 798,368,828 pounds of milk for which the members received \$28,493,762. This represented a gain in returns, over those in 1927, of \$2,915,514. Data as to the volume handled for years previous to that are not available, but over the 5-year period from 1923 to 1928, total service charges, the rate of which did not change, increased from approximately \$50,000 to

\$93,078, or an increase of 86 per cent. Five years ago a number of producers who shipped to distributors not cooperating with the association paid their service charges direct to the association. At present, the number of cooperating distributors has increased, and practically all service charges are received through cooperating distributors. Of the total membership holding stock, it is estimated that approximately 15,000 are delivering milk to cooperating distributors. Many of the others are not located so that they could advantageously ship to such distributors.

TABLE 12.—*Membership and local units of the Inter-State Milk Producers' Association, 1917–1928*

Year ended	Approximate membership	Local units	Year ended	Approximate membership	Local units	Year ended	Approximate membership	Local units
Oct. 31:	<i>Number</i>	<i>Number</i>	Oct. 31:	<i>Number</i>	<i>Number</i>	Oct. 31:	<i>Number</i>	<i>Number</i>
1917 1-----	4, 097	-----	1921-----	14, 697	244	1925-----	19, 830	275
1918-----	6, 009	-----	1922-----	15, 527	251	1926-----	21, 820	279
1919-----	10, 219	186	1923-----	17, 680	264	1927-----	22, 827	281
1920-----	12, 538	217	1924-----	19, 022	274	1928-----	23, 729	287

¹ Association was incorporated and began operating on Mar. 14, 1917.

The association's principal contribution to cooperative marketing has been its experience in equalizing seasonal production. It tried to function, in 1917 and 1918, on the same plan as many other bargaining associations—negotiating prices with distributors, making them higher when there was a scarcity of milk and dropping them again when supplies became plentiful. The Inter-State Milk Producers' Association, beginning with 1919, put into use a plan adopted by the Maryland State Dairymen's Association, of Baltimore, the previous year and usually known as the basic surplus plan (described under production control plans). The time employed as the basic period was October, November, and December, and the average production by a member during this period became his basic quantity for the nine months following; that is, from January to September, inclusive. The use of this period was continued from 1920 to 1926. Any producer was allowed to expand his business as much as he liked, providing he expanded his production in the last three months of the year accordingly.

In the fall of 1926 it appeared that expansion was taking place more rapidly than necessary, that production that fall would be heavy, and that there was a danger of a peak of production appearing during the three fall months. Prices had just been raised 35 cents per 100 pounds, which gave a further incentive for increasing fall production, which the management of the association wanted to offset. It was announced, therefore, in the fall of 1926, that basic quantities established in the fall of 1925 would be continued through the months of October, November, and December of 1926, as well as into 1927. This basis supplied a quantity of milk at basic prices which was estimated to about equal the quantity consumed in fluid form.

As many producers allowed their production to lapse somewhat in the three fall months, the association credited the producer, on

January 1, 1927, with the fall average of either 1925 or 1926, whichever was the higher. For 1928 the basic quantity was taken as the average of that established in the previous year for 1927 and production of the last three months of 1927. The basic quantity for 1929 is the average of that used in 1927 and 1928, and the production in the last three months of 1928. This makes the basic quantity for 1929 an average of three years and, if production remains at about the same figure during 1929 as in previous years, it is probable that the basic quantity may be established on the basis of a 3-year moving average of the production in the months of October, November, and December. The effect of this plan of operation upon seasonal production is indicated in Figure 11.

Prices of basic milk are determined by agreement in a conference of representatives of the producers' association and the distributors. If they should fail to agree, the price is determined by arbitration. Clyde L. King, of the University of Pennsylvania, has usually filled this place, when an arbitrator was necessary. Prices at country points are f. o. b. Philadelphia prices, minus the cost of transportation; and if the milk passes through a receiving station, a charge of 23½ cents per 100 pounds is made to the producer. There is a differential of 4 cents for each change of one-tenth per cent in butterfat, or 2 cents for each change of five one-hundredths or one-twentieth per cent in butterfat above or below a 4 per cent standard. Prices for first surplus milk, which is a quantity equal to, but in excess of the producers' basic quantity, are determined on the basis of the average monthly price of New York 92-score butter plus 20 per cent for the butterfat contained therein.

All milk in excess of this first surplus is paid for as second surplus, according to the price of the butterfat in it, at the average price of New York 92-score butter for that month. No transportation differential is employed for any surplus milk delivered to a receiving station, all such points receiving the same price. No allowance is made for skim milk. Because there is no transportation of surplus milk, the prices of fluid and surplus approach each other more nearly as the distance from market increases. In addition to the above prices, distributors must pay to the Inter-State Milk Producers' Association 2 cents per 100 pounds and a similar amount to the Philadelphia Inter-State Dairy Council on all milk purchased from members of the Inter-State Milk Producers' Association. On all milk purchased on the association's plan from nonmembers, the distributor pays 2 cents per 100 pounds to the above-mentioned dairy council.

In spite of the fact that retail prices in Philadelphia have been for the last 10 years, on an average, over 1½ cents a quart lower than in most other cities along the Atlantic seaboard, the price to producers has compared favorably with those paid in milk sheds supplying these cities. Retail milk prices for milk delivered to the family trade in a number of cities is shown in Table 21, page 90 of appendix. In January, 1929, retail prices for grade B bottled milk, delivered to family trade in the following eastern cities were as follows: Philadelphia, 13 cents; Boston, 15½ cents; Hartford, 16 cents; New York, 16 cents; Baltimore, 14 cents; Washington, 15 cents; and Pittsburgh, 15 cents. During the war period a limited

amount of zoning was done in Philadelphia, which prevented some duplication in retailing and possibly decreased distributors' costs to some extent. The lower spread between the prices paid producers and retail prices to consumers in Philadelphia is probably due in considerable part to the more even supply throughout the year (fig. 11) and to the increase in volume of business of each distributor. During the last 10 years, while total sales of five large distributors increased about 50 per cent, the number of distributors is reported to have declined from about 700 to 50.

CONNECTICUT MILK PRODUCERS' ASSOCIATION

The Connecticut Milk Producers' Association represents a type of bargaining association containing many features not common to

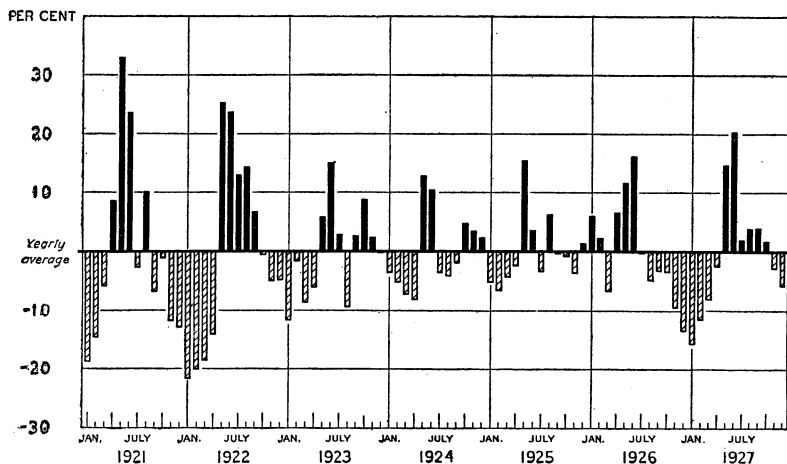


FIGURE 11.—AVERAGE MONTHLY PURCHASES OF MILK BY FIVE LARGE PHILADELPHIA DEALERS EXPRESSED AS PERCENTAGE DEVIATION OF THE YEARLY AVERAGE. (CORRECTED FOR TREND)

The seasonal variation in production by members of the Inter-State Milk Producers' Association decreased from 1921 to 1925 with a slight increase in 1926.

other associations. Its successful use of a contract plan of equalizing production throughout the year has been one of the things which set it apart from other associations.

It produces a high quality of milk and, along with this, has succeeded in bringing a State policy of protection to its dairy business. Every producer of milk for sale in Connecticut must be registered with the office of the State dairy and food commissioner before he can sell milk. State regulations as to requirements are prescribed and are under supervision of the State dairy and food commissioner. While local boards of health may make further regulations to safeguard the health of their cities, the fact that there is a uniform regulation throughout the State results in little variation in requirements.

The State policy of protection is, in effect, that as long as enough milk is produced within the State to supply the people at a reasonable price, the State will protect its dairymen against dumping of

outside milk, which is likely to come in at a lower price. The State department, therefore, does not make inspections and register producers outside the State, when that milk is not needed. The policy to date has proved beneficial to producers within the State. Should the policy be abandoned, as has been proposed by producers in other parts of New England, it would probably result in somewhat lower prices to producers, with supplies in the remainder of New England as they are at present; it probably would not result in any appreciable increase in prices to producers in other sections of New England.

The plan of the Connecticut Milk Producers' Association involves a series of pools by distributors. Each pool, therefore, includes only a relatively small territory, so that the difficulties common to pooling the product from a wide territory are not encountered. The association obtains milk from all parts of the State except the extreme eastern section, which ships to Providence and Boston. It also obtains a small quantity from just across the State line in New York. It sells milk in some 36 markets of the State, and in 1928 was selling milk to 112 distributors. The total membership reported on January 1, 1929, was 3,547, and they had contracted to furnish 316,000 quarts of milk daily from a total of 45,450 cows. Table 13 gives the membership and quantity of milk contracted by members from 1921 to 1929. The association's membership includes almost 100 per cent of those supplying milk to many of the markets, and its leaders have estimated about 75 per cent of the commercial dairymen of the State. It is governed by a directorate of 24, elected annually. An executive committee of five has the authority of the board between meetings. The association employs a general manager and assistant general manager.

TABLE 13.—*Connecticut Milk Producers' Association: Membership and milk under contract 1921-1929*

Year	Member- ship Jan. 1	Cows owned by members	Milk under contract for year ended Mar. 31	Year	Member- ship Jan. 1	Cows owned by members	Milk under contract for year ended Mar. 31
	<i>Number</i>	<i>Number</i>	<i>Quarts</i>		<i>Number</i>	<i>Number</i>	<i>Quarts</i>
1921.....	1,445	-----	58,500	1926.....	3,100	-----	277,000
1922.....	2,008	-----	118,000	1927.....	3,352	43,391	302,000
1923.....	2,487	-----	204,000	1928.....	3,505	44,838	324,000
1924.....	2,934	-----	224,000	1929.....	3,547	45,450	316,000
1925.....	2,923	-----	234,000				

It is purely a bargaining association. It neither owns nor operates plants nor actually handles milk. The members appoint the association their sole agent for the sale of milk and agree to deliver a specified quantity of milk each day to whomever the management of the association directs. If the producer fails to produce the contracted quantity or produces in excess of his contract, a definite penalty is provided.

Contracts with producers are made either on a pool or nonpool basis. For the year ended March 31, 1929, about 85 per cent of the producers are under the pool contract. The pool contract has been

in use since April 1, 1922. The producer with the nonpool or so-called straight contract is paid for all milk on the basis negotiated by the association, which is usually the price of class 1 milk. The producer agrees to deliver a specified quantity of milk each day. If his deliveries exceed 10 per cent above his contracted quantity in any month, all milk in excess of this 10 per cent above his contracted quantity is to be paid for at 2 cents per quart less than the price specified. Likewise, if the deficiency falls more than 10 per cent below the specified contract, the deficiency below 10 per cent is penalized 2 cents per quart. Approximately 15 per cent of the producers are selling on this plan.

The other 85 per cent of the producers selling under the pooling plan receive a price determined by blending the prices paid by each distributor, weighted according to the quantity of milk used in each class. That is, each distributor's purchases form a separate pool and the total money paid for milk in all classes is divided by the total quantity of milk purchased, and the resulting figure will be the price to be paid each producer for 4 per cent milk f. o. b. the market. Producers selling to different distributors may then receive somewhat different prices for the same kind of milk, because some distributors have used more of the milk in higher classifications than others. If this occurs, the association, having the authority to shift producers, may transfer some producers to more nearly equalize prices.

Contracts with producers are not continuous but must be renewed annually on April 1, when the quantity contracted must be named. A series of meetings is held each year, during February and March, at which time producers can conveniently sign contracts for the year following. New members pay a membership fee of \$5. For the services of the association, the producer pays annually on July 1, \$1 per cow on the average number in his herd, instead of a brokerage fee on sales. The distributor deducts whatever fees the association certifies are due it and pays these amounts to the association.

THE DAIRYMEN'S COOPERATIVE SALES CO.

This organization operates as a bargaining association with its primary market in Pittsburgh and secondary markets in Youngstown, Ashtabula, Wheeling, Sharpesville, East Liverpool, New Kensington, and other cities. It operates no plants but sells milk at wholesale to distributors who sell the milk to the consumers. Milk not used in fluid form or as cream is manufactured by the distributor.

The Dairymen's Cooperative Sales Co. represents a particular type of association. It combines the bargaining association with a number of pools within a milk shed instead of one large pool. It pools the milk going to all the distributors in a district, so every producer in that district receives the same price for his milk under substantially similar circumstances as related to quality and location, regardless of the uses made of the milk by the one distributor to whom he sells.

The total membership reported by the association on December 31, 1927, was 17,128. The set-up of the association places considerable emphasis on the local unit. There are approximately 141 local units in the association, and a minimum of 26 members is required for a

local. The local unit handles all local problems pertaining to hauling, testing, quality improvement of milk, maintaining membership, and selecting its own officers. A local sends a delegate to the advisory council for each group of 50 members, or major fraction (26 or more), in the local. The advisory council is the governing body of the producers. At the council meeting, which is held four times each year, delegates from the locals are given an opportunity to discuss their problems.

Policies and practices pertaining to the sale of dairy products are carried out by a board of five directors. These directors are nominated at the June meeting of the advisory council by the delegates to the council. The ballots are forwarded to the secretaries of the locals which hold their annual meetings about a week later, and producers vote for directors. The five persons receiving the largest vote are the directors for the following year, and are responsible through the advisory council and locals to the members.

Milk is sold to distributors on a classified price plan which recognizes the market values of milk in different uses. Five classes are employed: (1) Milk in fluid form, (2) cream, (3) butter, (4) cheese, and (5) evaporated milk.

Prices paid by distributors for milk used in fluid form or as cream are determined in open conference. The conferees meet at intervals of from one to five months, the frequency depending upon whether market conditions warrant price changes. Prices for both cream and fluid milk are determined by current market conditions. Prices for cream or milk used for cream are determined largely by prices at which western cream can be obtained. The retail price at which milk is sold is determined at a conference of distributors in cooperation with a committee of producers and consumers. Usually the retail price is based on a definite spread over the classification price for milk used in fluid form.

Prices for milk used in making butter, cheese, and evaporated milk are based directly upon country-wide market prices for these commodities. The price of butterfat in milk used for butter at Pittsburgh country plants is 15 per cent above the average monthly quotation of Chicago 92-score butter. If the average monthly quotation for butter was 50 cents, the price charged per pound of butterfat contained in the milk would be $50 \text{ cents} \times 1.15$, or 57.50 cents. For milk testing 3.5 per cent butterfat, the price would be $57.50 \text{ cents} \times 3.5$ or \$2.01 per 100 pounds for milk going into butter at country plants. All overrun above 15 per cent and the skim milk are allowed against the cost of manufacture. For milk made into cheese the distributors pay on the basis of the daily average of New York quotations for American cheese, white flats, less 3 cents per pound as a manufacturing expense. It is assumed that 9.41 pounds of 3.5 per cent milk equals 1 pound of cheese. Then there would be 10.63 pounds of cheese in 100 pounds of milk. If the daily average of New York quotations for cheese were 23 cents per pound and 3 cents is allowed for manufacture, the price to be paid by the distributor, for 3.5 per cent milk, would be 10.63×20 , or \$2.13 per 100 pounds. Milk manufactured into evaporated or condensed milk is charged to the distributor or manufacturer on the basis of prices determined by the conference board of midwestern condenseries.

The marketing department is in direct charge of the sales and supplies. It serves as a clearing house for payments, it diverts milk and makes adjustments in supplies to meet distributors' requirements.

The market area, in which the association operates, is divided into 12 districts. Each district is considered a distinct market unit. When a distributor within a market unit does not have enough milk to supply his needs, he reports the fact to the marketing department which is informed as to the relative supply and requirements of other distributors within the same market district. Transfers of milk are then made from distributors who have an excess to those who have an insufficient supply. This is usually brought about by transferring shippers. So far as price is concerned, it makes no difference to the shipper since his returns will be the same. A distributor not equipped to handle surplus may often have shippers transferred during peak production periods. In times of shortage, milk may be diverted from one of the country plants to one of the smaller fluid markets. Definite price provisions are made for the transfer of milk from one market to the other. Diversion of milk from one distributor to another and one use to another, as from the cream to fluid-milk class, is possible because of the regular sales on a use-classification basis.

All producers who have equal transportation costs receive the same price in a given market for milk of a specified fat content. The price paid producers is calculated from the volume of the entire market in each classification and its value at the classification prices, submitted to the marketing department of the association by the purchasing distributors in a given market. Each distributor pays the producers who ship milk to him the average price for his market (subject to fat and transportation differentials). When the total payments to producers are less than what the milk actually cost him, according to the volume and prices in the different classes, he pays to the marketing department the difference between the value of the milk received in the different classifications and the cash paid to producers. When the total payments to producers exceed the value of milk, calculated at prices for different classifications, the marketing department pays the net difference between the cash paid out by the distributor and the value of the milk received.

This plan differs from that of the usual bargaining association, in which each distributor pays the producers who ship to him on the basis of the uses made of the milk received during the month. Under that plan, farmers who produce similar milk at the same distance will receive the same price when the milk is shipped to the same distributor, but if shipped to different distributors they will receive different prices because of the different proportions of the milk used in fluid form.

The same plan of sale and operation is applied to each secondary market that is similar to the market in Pittsburgh. Producers within each market receive the distributors' payments, as derived from the sale of milk at classification prices, established in a conference of those who produce, those who distribute, and those who consume milk in that particular market. All problems relating to a given market are handled by the board of directors of the association in cooperation with the producers and distributors in that market.

Country plants are maintained in the Pittsburgh district only at those points at which a part of the milk passes through country receiving stations and a part is shipped direct. These country plants are owned and operated by the distributors. In all other districts the milk is shipped direct without passing through a receiving station.

Because of the high seasonal production, which amounted in different districts to from 50 to 80 per cent of the quantity produced in the month of low production, the association has modified the plan of payment to the producer so as to combine a basic surplus plan with the plan in use. This was initiated October 1, 1928, in district No. 1, or the Pittsburgh district, and it is planned to extend it to other districts of the shed if it proves successful.

Sales to distributors are made as formerly on a classification basis according to utilization, but total returns from these sales are paid to producers in such a way that those producers who have the least seasonal variation in their production will supply a greater proportion of the class 1 milk and therefore receive a higher average price than those with more uneven production.

The plan of securing a base is as follows: Total fluid sales of distributors for every month (adjusted to 30 days) of the year are ascertained, and the quantity sold in the month of lowest sales is taken as the base month. Production for each month of the year is also ascertained and the average for the four lowest consecutive months of production (adjusted to 30-day month) taken as the base period. The production by each member during this period is used as a basis for determining the member's basic quantity for the coming year. The ratio of sales in the month of lowest production to the average monthly production during the basic period forms the basic ratio. If this ratio is 70, then each producer is paid class 1 prices for 70 per cent of his average production during the basic period; that is, assuming the sales of fluid milk in the month of lowest sales to be 7,000,000 pounds and the average monthly production during the basic period to be 10,000,000 pounds, each producer would be allotted 70 per cent of his average production during the basic period as his basic quantity. Assume his average during this period to be 8,000 pounds per month. Then he is paid class 1 prices for 70 per cent of 8,000 or 5,600 pounds of milk during any month. All in excess of this quantity is paid for at surplus prices. If, however, he produces only 5,000 pounds in any month, he is paid the class 1 price for his entire production, and no penalty is exacted for his failure to produce more. Whenever more than 7,000,000 pounds is sold to distributors as fluid milk in any one month the proceeds from the sale of this additional milk in class 1 increases the price of surplus milk in those months. There is no penalty for failure to produce a quantity equal to or in excess of the producer's basic quantity, except that the member who produces a larger proportion of his milk in the summer receives lower prices than does the one who produces a more even supply throughout the year, and it is to the advantage of every member to produce as large a quantity as possible during the basic period.

In the spring of 1929 this basic surplus plan had been extended to five districts in the milk shed.

COOPERATIVE PURE MILK ASSOCIATION

The Cooperative Pure Milk Association, which operates in Cincinnati, is one of the few large cooperative fluid-milk associations that has entered the field of retail distribution in a large city. The principal cause of its entry into this field was the opposition of the local milk trade to any cooperative. The association has a membership of approximately 3,200. It secures its milk from Ohio, Kentucky, and Indiana, a maximum distance of about 42 miles in the two former States and 52 miles in the latter. For the fiscal year ended March 31, 1928, deliveries of milk were 85,036,098 pounds, for which members received \$2,286,379, and in addition 74,142 pounds of butterfat in sour cream, for which members were paid \$34,291. The milk is sold largely for fluid consumption and for the manufacture of ice cream.

Each producer signs a contract with the association which runs continuously but may be canceled by the producer or association. During the period from 1915 to 1923 three different cooperative associations were engaged in marketing fluid milk in Cincinnati. The first to come into existence, the Queen City Milk Producers' Association, was organized in 1917. This association was a purely voluntary organization and attempted to function as a bargaining association. It remained in existence until the Tri-State Cooperative Milk Marketing Association began operation on January 1, 1923. Because of opposition by the Tri-State Butter Co., the name Tri-State was abandoned, and the charter of the association was amended. A short time later, the association reincorporated to secure the benefits of the cooperative laws passed in Ohio, and a new charter was granted it on September 10, 1923, under the name of the Cooperative Pure Milk Association.

The association was, at the end of 1928, the largest fluid-milk cooperative in the United States, taking the milk from the farmer and distributing it to the consumer.

The difficulties with distributors in Cincinnati resulted in this particular type of organization. The distributors were organized as the milk exchange of the chamber of commerce. The largest distributor was the most influential member and the strongest in the distributor opposition to cooperatives.

It was the original plan, in the formation of a cooperative association, to negotiate prices with distributors, as was being done by bargaining associations in other cities. Since the distributors refused to recognize the association, nothing could be done as a bargaining association, so far as selling milk was concerned. The association was in reality forced to acquire its own outlets to consumers in order to function.

Only a small quantity of its members' milk was taken at first. The association began the operation of 1 wagon in January, 1923, and made the remainder of the milk into butter and ice cream. In July, 1923, it was operating 33 wagons. Some of the distributors began to refuse to take milk from any members. The association tried to care for the milk, even though it was necessary to ship some of it south. About July 1, the association issued a call for all the members' milk after July 15, and notified distributors if they needed milk they could obtain it from the association. Some of the dis-

tributors obtained 95 per cent of their supply from the association. The association had only four pasteurization plants; had the distributors refused to buy milk from the association, the latter would have had difficulty in taking care of it. Before July 15, however, the largest distributor in Cincinnati, distributing at that time about 50 per cent of the fluid milk, 75 per cent of the ice cream, and a large part of the butter and cheese, announced that it would buy its milk from the cooperative. This company had been the leader of the opposition, but control had passed into the hands of a group who felt it would be more profitable for them to work with the cooperative.

This company then offered to sell its business to the cooperative association. The association agreed to buy it at the appraised value, which was approximately \$3,600,000. This included nothing for good will. Out of the 120,000 shares of stock outstanding, 100,000 shares were placed on deposit under a trust agreement, and the cooperative agreed, on November 30, 1923, to purchase this stock over a 5-year period with the option of a 3-year extension. The contract became effective January 1, 1924.

Under the original agreement the minimum payment was to be \$150,000 per year; in addition dividends on stock were to be maintained, and 4 per cent of the valuation of the assets or \$144,000 was to be set aside annually in a fund to be used for expansion.

The purchase of this business was financed through a certificate-of-indebtedness plan. At the time the member signed the contract the association required an advance of \$20 per cow, either cash or a 30-day note. This was the plan on which the original plants had been financed. In addition to the advance payment, the contract gives the association the right to make such deductions as necessary from the monthly milk checks. For initial payments of \$20 per cow, as well as for these deductions, certificates of indebtedness bearing 6 per cent interest, payable annually, are issued. One-fifth of the principal of this certificate is due at the end of the sixth year and one-fifth annually thereafter until the end of the tenth year, when the entire principal will be repaid.

The management of the company was retained and the business carried on as before. The milk exchange had refused to negotiate with the company as soon as it had been purchased by the cooperative, and the distributors started a costly milk war, expensive to them and to the cooperative. At the end of the first year, the cooperative was unable to meet its entire contract. The interests that had sold the stock were sympathetic and wanted to complete their sale. They agreed to allow the cooperative association to defer the dividends due, and many of the stockholders generously assigned any claim they might have to these dividends to the cooperative. In 1925, they allowed a modification of the contract so that only 7 per cent dividends were to be paid on the common stock and 6 per cent on the preferred. The expansion provision of the contract for \$144,000 per year, after having been carried out for one year, was discontinued until such time as the cooperative was in a position to continue it. The company sold its grocery stores, bakery, and some other properties and used the proceeds, together with its surplus, for expansion.

The 5-year period from the date the original contract became effective, ended January 1, 1929. At the end of 1927 the association had paid \$8 per share on the purchase price of \$22. The original agreement provided that one-half of the stock should be paid for at the end of five years, and that the entire debt should be paid in eight years. To meet this agreement would have required a payment of \$3 per share in 1928, which could have been met by increasing deductions or by outside loans. The same would be true of the \$11 per share for the next three years. On December 20, 1928, however, the contract with the stockholders was further modified. This agreement provided that no payments would be made in 1928, 1929, or 1930; for the years 1931 up to and including 1937, a minimum payment of \$1 per share must be made; and by the end of 1938 full payment for the stock must be completed. This effects a 7-year extension of the original contract.

The association plans to continue making its capital deductions of approximately 20 cents per 100 pounds on deliveries, and the needs of the company for expansion will be supplied during the next few years from this fund, after the guaranteed dividends have been set aside. These deductions for 1927-28 amounted to \$170,373. A certain amount of these deductions for 1929 and the years following will have to be used to meet payments on certificates of indebtedness, the first of which will be due in 1930. If the present volume of business can be maintained, which appears probable, the association should be able to meet its contract without further modifications.

Because of the retail distribution feature, the operations of this association have been watched with particular interest by the other cooperatives. It has been one of the few cooperatives entering this field that have bought an active going concern, in contrast to the policy of buying retail businesses which some proprietary interest had not been able to operate at a profit. Few of these attempts at rehabilitation have been any more successful than the operations of those from whom the business was purchased.

The broadminded attitude toward cooperatives and the generous treatment of the Cooperative Pure Milk Association by the stockholders of the company has been an important factor contributing to the success of the venture. It is so unusual that another association could not rely upon finding similar conditions upon entering the retail field.

TWIN CITY MILK PRODUCERS ASSOCIATION

The Twin City Milk Producers Association is a typical fluid-milk marketing association operating over a relatively small milk shed. It is the oldest of the large operating or marketing associations. Organized originally as a bargaining association, it was incorporated January 2, 1917, and began handling milk on April 1, 1917. The entire bargaining plan was abandoned in July, 1918, and it has since continued as an operating association.

The association obtains its milk within a 40-mile radius of the Twin Cities, including the counties of Anoka, Hennepin, Ramsey, Washington, and Dakota; and practically all of Carver and Scott;

and parts of Isanti, Chisago, Goodhue, Rice, Le Sueur, Wright, and Sherburne, and a very small area in Wisconsin.

Within this 40-mile radius are located 96 creameries and cheese factories, many of which are within easy hauling distance. Fifteen of these are owned and operated by the Twin City Milk Producers Association as receiving and manufacturing plants. A rough approximation of the density of production of milk in the Twin City milk shed may be obtained from census figures. Calculation of the quantity of milk per square mile of land in farms, based on these data for counties in the milk shed, shows an annual production of over 200,000 pounds of milk per square mile. If the entire area, including lakes and cities and all lands not in farms, as well as that in farms is considered, the average density of annual production is about 160,000 pounds per square mile in the counties from which the association receives its milk. From these data it appears that the total milk production within the 40-mile radius of St. Paul and Minneapolis is about five times as great as the volume consumed for fluid milk and cream in these cities. Within an 80-mile radius there is approximately twenty times as much milk as required for fluid consumption.

It is evident, therefore, that the possibility of anything approaching monopoly control is out of the question. Likewise prices paid to producers can not greatly exceed the prices returned for milk when sold for manufacture, or the association could not keep milk from the fluid market. Health regulations in these cities do not act as appreciable barriers.

The association operates some 15 plants located within the 40-mile radius of the Twin Cities. One of these is located in Minneapolis and another in St. Paul. The greater part of the milk sold to the distributors for fluid distribution is trucked from the country direct to the plants of the distributors. The other milk for manufacture may remain at the country plants or be brought to the St. Paul or Minneapolis plants. The plants in the cities are used principally for manufacture but also serve as a source of supply for any distributor who does not have a sufficient quantity of milk coming direct to his plant or as a place to take care of extra milk in case his supply exceeds his requirements.

The association was originally financed by the sale of capital stock. Provision was made that no man could be a stockholder in the corporation unless he was a dairyman engaged in business as such, or an officer or director of a cooperative creamery. The principle of one man one vote was followed.

The organization originally authorized an issue of \$50,000 capital stock consisting of 50,000 shares having a par value of \$1 each. At the annual meeting on November 3, 1919, a plan of reorganization was submitted, and at a special meeting on December 8 the association decided to reorganize under the new cooperative law of Minnesota. A capitalization of \$500,000 was authorized to consist of 10,000 shares of \$50 par value. Each member was asked to take one share, and a 6 per cent dividend basis for the coming year was announced at once. Provision was made for the redemption of any shares whenever a member discontinued his business and ceased to be a producer. If the producer did not wish to pay cash he could have 5 per cent

deducted from his milk check each month until he had paid for the share. The value of the old shares at this time had grown from \$1 to \$6.50, and credit on new shares was given for the old on this basis.

Up to this time the association had been renting all its plants. Contracts had to be renewed each year, and there was always the possibility of having to rent on unfavorable terms, or the lessee might even not care to lease again. The association was hindered in making economical improvements and providing proper equipment to manufacture the most profitable products. Machinery in one factory, not in use, could not be profitably moved to another. In addition, the association often found it necessary to sell its products at an inopportune time. This was especially true of cheese. These handicaps, and the wish to buy or build new plants, constituted the principal cause of increased capitalization at this time.

In March, 1921, a definite rule was made regarding the number of shares each member must purchase. Every new member joining after that date was required to buy one share of stock for each cow in his herd, with three as the minimum number of shares. Exceptions might be made to the minimum in special cases, but not to the one share for each cow. No definite ruling was made with respect to old members but they were urged to meet the same requirements. A further increase in capitalization from \$500,000 to \$1,000,000 was authorized in 1922. By September 30, 1925, the membership had reached 6,479, and the total shares of stock outstanding was 13,517, with a par value of \$675,850.

At the annual meeting, December 10, 1926, the authorized capitalization was increased from 20,000 shares of \$50 par value or \$1,000,000 to 60,000 shares or a capitalization of \$3,000,000. The capital stock outstanding on October 31, 1926, was \$878,600, and on October 31, 1928, capital stock sold, including that not fully paid for but subscribed to, amounted to \$1,051,600.

The dividend rate on stock is determined by the directors. It was at the rate of 6 per cent until December 31, 1924; since then it has been 7 per cent.

To keep the stock in the hands of dairymen as much as possible, the directors have acted to take up at par any stock owned by a member who sells his farm and cows and goes out of the dairy business in the Twin City territory. The by-laws, however, do not stipulate that the holder must sell his stock at par.

The association's territory is divided into 50 locals, although they have no legal status, they are an important working part of the organization. Representation is by locals, which means as many directors as locals. These locals are formed wherever groups of producers naturally come together, and vary from 30 to 300 members. Before the annual meeting one or more members from each local are nominated as directors, and nominations are presented at the annual meeting for a vote of the entire membership. Voting may be by mail but not by proxy. There is no specified number of locals or directors for the association, but whenever the territory is increased and there is a new natural group, a new local is formed, and the directorate is increased. The articles of incorporation provide for a minimum directorate of 5 and a maximum of 100. The length of the directors' term is one year.

An executive committee of five is elected by the directors from among their number. The manager is employed by the executive committee and is in charge of all the personnel under the direction and supervision of the executive committee, which meets every Monday morning. The directors meet regularly on the 10th of March, June, September, and December.

Every member is required to sign a 1-year contract which is self-renewing but may be canceled by the member by giving notice 30 days before June 1 of any year. Contracts are made with distributors for the sale of milk and other products; a yearly contract is customary, and the price is based on marketing conditions. Most of the contracts are for a distributor's entire supply, but some provide that the distributor may obtain a part of the milk outside; the association is then paid for taking care of the surplus of these non-members.

The association has both a milk and a cream pool. All milk of a given quality delivered by members is pooled, and each receives the same for the milk f. o. b. the Twin Cities, regardless of the use made of a particular lot of milk. Milk may be actually delivered to a country plant, and manufactured, and yet not reach the central market. If the milk passes through the country receiving station, the zone transportation rate, which is about 1 cent per mile per 100 pounds of milk, is deducted just as if it had gone direct to the city; that is, payment is made on the basis of city delivery.

About 1,000 members deliver cream instead of milk and at some points the association is equipped to receive cream only. The sale of cream is likely to prove as profitable as milk at points 35 or more miles distant from the Twin Cities. The cream is made into butter or sold as sweet cream. This part of the business is kept in a separate pool from the milk. Prices are determined by taking actual sales minus expense. As these pools depend on somewhat different factors, the prices of milk and cream do not always bear the same relationship. When butter prices are high and prices for such products as condensed milk and milk powder are low, the price of cream will be relatively high and those participating in the cream pool may receive higher prices than those in the milk pool.

Pools are for a 1-month period. At the end of that time expenses for the month are deducted from the total amount received, and returns are made to producers. Such items as taxes, insurance, and dividends on stock are apportioned in such a way that one-twelfth the yearly requirements are deducted monthly. The price for the preceding month is ordinarily calculated on the 9th of the month following. At that time a certain amount of the sales must be estimated. The Land O'Lakes Creameries (Inc.), and the National Cheese Producers Federation, both of which purchase products from the Twin City Milk Producers Association do not make a return for butter and cheese until about the 15th of the month. Returns are sufficient, however, to make possible a fairly accurate estimate of prices.

CALIFORNIA MILK PRODUCERS ASSOCIATION

The California Milk Producers Association of Los Angeles is the largest fluid-milk cooperative association west of the Twin Cities. It was organized in 1915. It is a bargaining association, but it is

often considered an operating association because it has established subsidiary operating organizations.

Its volume of business has shown a rapid growth. In 1917 the sales of milk handled amounted to \$521,611; in 1928 they amounted to \$6,210,484. The membership is approximately 500.

The association charges a membership fee of \$5 per cow, with \$50 as the minimum membership fee if the producer has less than 10 cows. Ten per cent of this fee is payable upon joining the association; over half the balance is due one year later, and the other half is due two years later. Memberships are not transferable except on consent of the association. If a member ceases to be a producer for a period of two years the association will return the amount of the membership fee, or a smaller amount if its book value is less than the amount paid in. In no case under these circumstances will the amount paid be more than the membership fee paid by the producer.

The purchase in 1920 of the controlling interest in one of the large distributing plants in Los Angeles, which operated about 26 retail routes, marked the entry of the association into the operating field. It acquired 60 per cent of the creamery company's stock for \$60,000, paying \$25,000 cash, raised by borrowing money on notes signed by the directors; the balance was to be paid at the rate of \$1,000 per month. A creamery-purchase fund was set up, and deductions of 2 cents a pound of butterfat in the milk sold was made to meet payments. After 25 months of deductions, creamery-purchase certificates were issued to the members for the deductions made. The common stock purchased was held by the California Milk Producers Association. Later a preferred stock dividend in this operating association was paid to holders of the creamery-purchase certificates. Any member who went out of business was repaid the amount of his certificates.

At the end of 1925 the association reported that 41 per cent of the production of its membership was being distributed through its own plants which were operating 200 routes. The remainder of the milk was being sold at wholesale to other distributors. In February, 1926, a basic surplus plan of payment for milk was adopted.

In 1927 the California Cooperative Creamery Co. was incorporated, taking over all physical facilities of the association for the sale of dairy products, and became the operating company for the California Milk Producers' Association. The Dairymen's Feed & Supply Co., established several years earlier by the association for the sale of supplies and feed to members of the California Milk Producers Association, still remained a separate organization. The management and control of the California Milk Producers Association, the California Cooperative Creamery Co., and the Dairymen's Feed & Supply Co. are, however, practically the same.

Early in 1928 three creameries at San Bernardino were purchased by the operating association and consolidated into one creamery. The plant there is used chiefly as a surplus plant, and is equipped for the manufacturing of powder. At the end of 1928 the plant was separating about 600 cans of milk per day, powdering the skim milk, and marketing the sweet cream largely in Los Angeles. The California Cooperative Creamery Co. also enlarged its business in Los Angeles considerably, in 1928. The Sanitary Gold Seal Dairy was

purchased for \$1,550,000, and bonds amounting to \$1,725,000 were issued.

Early in 1929 the California Milk Producers Association decided it could best serve its members by disposing of its distributing business in Los Angeles to a large proprietary corporation. The sale price was reported as approximately \$4,000,000. After retiring all outstanding obligations to its membership, except the original membership fees, there will remain in the treasury of the California Milk Producers Association, which will continue as a bargaining association, a reserve of about \$1,000,000. Most of this will probably be retained by the association as a contingency reserve although many of the members want to have it distributed.

NATIONAL COOPERATIVE MILK PRODUCERS FEDERATION

The National Cooperative Milk Producers Federation is a national trade body for the cooperative dairymen of the United States. It does not engage in business in any way, but is a service organization. Its membership includes not only cooperative milk marketing associations, but also cooperatives engaged in manufacturing milk products. The federation was incorporated in February, 1917, under the laws of Illinois, with a membership of some eight cooperative dairy associations. In 1928 it included 45 of the large cooperative dairy associations and federations of the United States, with a membership of over 300,000 and a total business of over \$300,000,000. Among its membership are listed 34 milk-marketing associations, 2 federations of cooperative creameries, 2 federations of cooperative cheese factories, a sales agency, a service organization for cooperative creameries; the remainder are individual cooperatives engaged principally in manufacturing butter, concentrated milk, and other products.

A list of the members of the organization, together with the date of organization, membership of each association, and value of the business transacted for the calendar year 1928, or the fiscal year ended in that year, as reported by the United States Department of Agriculture is given in Table 14.

TABLE 14.—*Member associations of the National Cooperative Milk Producers Federation, 1928*

Association	Date of organization	Estimated number of members	Estimated annual sales
	<i>Year</i>	<i>Number</i>	<i>Dollars</i>
Berrien County Milk Producer's Association, Benton Harbor, Mich.....	1918	168	441,000
California Milk Producers Association, Los Angeles, Calif.....	1915	480	6,210,484
Challenge Cream and Butter Association, Los Angeles, Calif.....	1911	15,000	15,689,910
Chicago Equity Union Exchange, Chicago, Ill.....	1917	5,000	2,985,401
Connecticut Milk Producer's Association, Hartford, Conn.....	1917	3,547	12,000,000
Cooperative Pure Milk Association of Cincinnati, Cincinnati, Ohio.....	1915	3,400	2,022,583
Dairymen's Cooperative Sales Co., Pittsburgh, Pa.....	1918	19,104	12,373,849
Coos Bay Mutual Creamery Co., Marshfield, Oreg.....	1919	455	449,255
Dairymen's League Cooperative Association (Inc.), New York, N. Y.....	1921	43,067	85,648,162
Des Moines Cooperative Dairy Marketing Association, Des Moines, Iowa.....	1917	1,250	81,000
Farmer's Milk Producers Association, Richmond, Va.....	1916	106	1,200,000
Gray's Harbor Dairymen's Association, Satsop, Wash.....	1918	300	330,937
Illinois Milk Producers Association, Peoria, Ill.....	1926	1,245	788,186
Indiana Dairy Marketing Association, Muncie, Ind.....	1922	546	396,000

TABLE 14.—*Member associations of the National Cooperative Milk Producers Federation, 1928—Continued*

Association	Date of organization	Estimated number of members	Estimated annual sales
	<i>Year</i>	<i>Number</i>	<i>Dollars</i>
Inland Empire By-Products Co., Spokane, Wash.....	1918	874	628,000
Inter-State Milk Producers Association, Philadelphia, Pa.....	1917	21,829	28,290,888
Iowa Cooperative Creameries Secretaries and Managers Association, Waterloo, Iowa.....		15,000	9,000,000
Land O'Lakes Creameries (Inc.), Minneapolis, Minn.....	1921	73,000	47,834,068
Lewis-Pacific Dairymen's Association, Chehalis, Wash.....	1919	1,000	993,695
Maryland and Virginia Milk Producers Association, Washington, D. C.....	1916	1,000	4,677,662
Maryland State Dairymen's Association, Baltimore, Md.....	1917	3,700	8,161,257
Miami Valley Cooperative Milk Producers Association, Dayton, Ohio.....	1922	4,000	1,318,663
Michigan Milk Producers' Association, Detroit, Mich.....	1916	10,000	15,000,000
Milk Producers' Association of San Diego County, San Diego, Calif.....	1917	55	548,712
Milk Producers' Association of Summit County, and Vicinity, Akron, Ohio.....	1917	2,300	2,701,000
Milwaukee Cooperative Milk Producers, Milwaukee, Wis.....	1916	1,800	5,400,000
National Cheese Producers Federation, Plymouth, Wis.....	1914	7,500	9,033,359
New England Milk Producers' Association, Boston, Mass.....	1917	20,154	30,000,000
Northwestern Cooperative Sales Co., Wauseon, Ohio.....	1920	4,000	979,466
Ohio Farmers Cooperative Milk Association, Cleveland, Ohio.....	1919	3,500	5,841,000
Pure Milk Association, Chicago, Ill.....	1925	3,500	5,477,000
Scioto Valley Cooperative Milk Producer's Association, Columbus, Ohio.....	1923	3,250	1,978,100
Seattle Milk Shippers Association, Seattle, Wash.....	1921	450	2,209,978
Skagit County Dairymen's Association, Burlington, Wash.....	1916	1,500	2,532,123
Snohomish County Dairymen's Association, Everett, Wash.....	1917	1,182	1,559,231
St. Louis Pure Milk Producers Cooperative Association, East St. Louis, Ill.....	1913	18,000	19,600,000
Stark County Milk Producers Association, Canton, Ohio.....	1910	700	982,500
Tillamook County Creamery Association, Tillamook, Oreg.....	1909	700	1,851,529
Twin City Milk Producers Association, St. Paul, Minn.....	1916	7,527	9,854,354
Twin Ports Cooperative Association, Superior, Wis.....	1916	316	506,000
Valley of Virginia Cooperative Milk Producers, Harrisonburg, Va.....	1922	700	247,000
Whatcom County Dairymen's Association, Bellingham, Wash.....	1919	1,650	2,728,951
Yakima Dairymen's Association, Yakima, Wash.....	1921	909	630,000

¹ As reported by the association for 1928. This organization was later succeeded by the Sanitary Milk Producers Association.

The organization employs a full-time secretary and maintains an office at its headquarters in Washington, D. C. The purpose of the federation is service to its members, the dairy cooperatives. It collects and disseminates information for the promotion of cooperative marketing of dairy products, furnishes price and other market information to its members, serves as a clearing house for exchange of information between cooperative associations, and assists in bringing the experience and counsel of member associations to any member association that wishes such service.

The association has been especially effective in the field of securing legislation beneficial to the producers represented by these dairy cooperatives of the federation. It is the policy of the federation to advocate no measure that has not the unanimous indorsement of the board of directors of the federation, of which there are 25, chosen from the cooperative associations constituting its membership.

Among the more important pieces of legislation which the National Cooperative Milk Producers Federation has been active in sponsoring since its organization are the following:

The Capper-Volstead Act.

The cooperative marketing act, establishing the Division of Cooperative Marketing in the United States Department of Agriculture and authorizing cooperative associations and federations of cooperatives to exchange crop and market information.

The agricultural tariffs of the emergency tariff act of 1921.

Establishment of higher duties in the dairy schedules and vegetable-oil schedules of the tariff act of 1922.

The packers and stockyards act.

The Federal antitified milk act.

Increased appropriations for eradication of bovine tuberculosis.

Increased appropriations for Federal agricultural research, including dairy activities.

It has aided individual members in opposing freight-rate increases on milk and cream in their respective territories. It has energetically presented the case of the dairy cooperative before the Tariff Commission to secure the benefits of increases in duties under the flexible provisions of the tariff act. It has taken an active part in appearing before the Ways and Means Committee and in working for an increased tariff on dairy products and vegetable fats and oils used in the manufacture of butter substitutes under the present contemplated tariff revision.

APPENDIX

TABLE 15.—*Weighted average milk prices in dollars per 100 pounds, f. o. b., city market, received by members of the New England Milk Producers' Association, 1920-1928*¹

Month	1920	1921	1922	1923	1924	1925	1926	1927	1928
January.....	4.06	3.41	2.45	3.09	3.15	2.92	2.96	2.82	3.23
February.....	3.93	3.05	2.40	3.05	2.74	2.87	2.95	2.87	3.10
March.....	3.92	2.82	2.39	3.02	2.41	2.64	2.82	2.83	3.05
April.....	3.74	2.71	2.23	2.56	2.11	2.58	2.70	2.77	2.66
May.....	3.42	2.37	2.19	2.48	2.10	2.35	2.65	2.51	2.54
June.....	3.26	2.36	2.18	2.43	2.13	2.32	2.32	2.44	2.44
July.....	3.56	2.78	2.48	2.62	2.47	2.62	2.66	2.60	2.77
August.....	3.92	3.12	2.62	2.99	2.67	2.88	2.77	2.87	3.03
September.....	3.93	3.24	2.73	3.10	2.90	3.00	2.87	3.10	3.03
October.....	3.95	3.22	3.00	3.12	2.91	3.11	2.81	3.19	3.15
November.....	3.92	3.25	3.16	3.41	3.02	3.13	3.14	3.34	3.46
December.....	3.83	3.95	3.15	3.28	3.00	3.05	3.10	3.40	3.34
Average.....	3.79	3.02	2.58	2.93	2.64	2.79	2.81	2.89	2.99

¹ All prices are converted to a basis of 3.5 per cent milk. The butterfat differential varies from month to month.

TABLE 16.—*Weighted average milk prices in dollars per 100 pounds, f. o. b., city market, received by members of the Dairymen's League Cooperative Association, 1920-1928*¹

Month	1920	1921	1922	1923	1924	1925	1926	1927	1928
January.....	4.42	3.91	2.84	2.94	2.65	3.145	3.12	3.20	3.43
February.....	4.21	3.31	2.70	3.04	2.55	3.03	3.04	3.20	3.33
March.....	4.09	2.83	2.33	2.86	2.53	2.99	2.95	3.13	3.01
April.....	3.28	2.83	2.065	2.805	2.48	2.865	2.845	2.97	2.78
May.....	3.28	2.435	2.03	2.55	2.13	2.62	2.665	2.75	2.69
June.....	3.56	2.15	2.075	2.645	2.07	2.53	2.54	2.66	2.59
July.....	3.68	2.43	2.35	2.715	2.15	2.58	2.68	2.77	2.81
August.....	4.08	2.88	2.485	2.815	2.365	2.83	2.89	2.95	3.16
September.....	4.38	2.97	2.73	2.93	2.575	2.945	3.09	3.28	3.31
October.....	4.38	3.20	2.94	3.05	2.59	3.04	3.11	3.41	3.42
November.....	4.38	3.15	3.195	3.06	2.99	3.14	3.25	3.55	3.61
December.....	3.91	3.12	3.48	2.88	3.14	3.16	3.33	3.52	3.57
Average.....	3.97	2.93	2.60	2.86	2.52	2.91	2.96	3.12	3.14

¹ All prices are converted to a basis of 3.5 per cent milk. The butterfat differential is 4 cents for each one-tenth per cent.

TABLE 17.—*Weighted average milk prices in dollars per 100 pounds, f. o. b., city market, received by members of the Inter-State Milk Producers' Association, 1920-1928*¹

Month	1920	1921	1922	1923	1924	1925	1926	1927	1928
January.....	3.845	3.365	2.595	3.125	3.125	3.085	3.183	3.451	3.423
February.....	3.905	3.325	2.595	3.115	3.115	3.105	3.097	3.400	3.419
March.....	3.885	3.265	2.565	3.085	3.075	3.095	3.052	3.428	3.397
April.....	3.955	3.195	3.535	3.065	3.015	3.105	3.036	3.426	3.376
May.....	3.785	2.595	2.475	3.185	2.925	2.985	2.790	3.302	3.287
June.....	3.685	2.375	2.485	3.235	2.945	3.075	2.800	3.281	3.265
July.....	3.665	2.565	2.545	3.415	2.975	3.065	3.051	3.338	3.320
August.....	3.885	2.585	2.525	3.365	2.965	3.045	3.053	3.316	3.350
September.....	3.985	2.585	2.605	3.445	2.975	3.125	3.246	3.372	3.384
October.....	4.385	2.645	3.155	3.575	3.155	3.145	3.404	3.396	3.387
November.....	4.385	2.645	3.155	3.165	3.155	3.205	3.447	3.416	3.489
December.....	3.455	2.645	3.155	3.165	3.155	3.375	3.459	3.419	3.489
Average.....	3.902	2.816	2.699	3.245	3.048	3.118	3.135	3.384	3.383

¹ All prices are converted to a basis of 3.5 per cent milk. The butterfat differential is 4 cents for each one-tenth per cent.

TABLE 18.—*Weighted average milk prices in dollars per 100 pounds, f. o. b., city market, received by members of the Maryland State Dairymen's Association 1918-1927*¹

Month	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
January.....	3.05	4.13	4.27	3.45	2.52	2.97	3.00	2.99	3.03	3.32
February.....	3.05	3.84	4.15	3.34	2.49	2.98	3.03	3.03	3.04	3.33
March.....	3.05	3.16	4.00	2.84	2.46	2.95	3.00	3.00	2.98	3.27
April.....	3.05	3.14	3.84	2.82	2.45	2.96	3.02	3.05	2.99	3.24
May.....	3.05	2.99	3.67	2.73	2.27	2.92	2.85	2.93	2.85	2.97
June.....	3.05	3.05	3.67	2.19	2.27	2.87	2.78	2.98	2.74	3.06
July.....	3.05	3.05	3.71	2.53	2.30	2.96	2.92	3.05	2.99	3.18
August.....	3.05	3.51	3.98	2.48	2.41	3.28	2.92	3.00	3.03	3.18
September.....	3.98	4.21	4.21	2.40	2.45	3.61	2.87	3.14	3.06	3.22
October.....	4.21	4.21	4.21	2.59	2.59	3.63	2.97	3.25	3.32	3.32
November.....	4.44	4.21	4.09	2.59	2.82	3.28	3.10	3.27	3.39	3.33
December.....	4.44	4.21	3.51	2.59	3.17	3.17	3.04	3.22	3.36	-----
Average.....	3.46	3.64	3.94	2.71	2.52	3.13	2.96	3.08	3.07	3.22

¹ All prices are converted to a basis of 3.5 per cent milk. The butterfat differential is 5.8 cents for each one-tenth per cent.

TABLE 19.—*Weighted average milk prices in dollars per 100 pounds, f. o. b., city market, received by members of the Dairymen's Cooperative Sales Co., 1923-1928*¹

Month	1923	1924	1925	1926	1927	1928
January.....	3.80	3.57	3.04	3.15	3.39	3.37
February.....	3.74	3.21	3.04	3.09	3.35	3.03
March.....	3.57	3.10	3.09	3.06	3.35	2.99
April.....	3.57	2.98	3.04	2.85	3.01	2.73
May.....	2.80	2.57	2.48	2.60	2.84	2.68
June.....	2.80	2.68	2.86	2.60	2.76	2.58
July.....	3.04	2.80	2.92	2.63	2.82	2.71
August.....	3.16	2.80	2.98	2.93	2.90	2.97
September.....	3.33	2.92	3.09	2.93	3.12	3.09
October.....	3.51	2.92	3.27	3.16	3.46	3.83 2.50
November.....	3.74	3.04	3.27	3.52	3.51	3.83 3.25
December.....	3.68	3.16	3.27	3.54	3.45	3.82 3.24
Average.....	3.40	2.98	3.03	3.01	3.16	-----

¹ All prices are converted to a basis of 3.5 per cent milk. The butterfat differential is 5 cents for each one tenth per cent.

² Basic surplus price.

TABLE 20.—*Weighted average milk prices in dollars per 100 pounds, f. o. b., city market, received by members of the Cooperative Pure Milk Association, 1920-1928*¹

Month	1920	1921	1922	1923	1924	1925	1926	1927	1928
January.....	4.44	3.90	2.70	2.70	3.20	2.25	2.50	-----	2.70
February.....	4.25	3.30	2.70	2.70	2.95	2.25	2.50	-----	2.60
March.....	4.20	3.30	2.30	2.70	2.60	2.45	2.40	-----	2.60
April.....	3.70	3.15	2.30	2.60	2.60	2.50	2.25	2.50	2.40
May.....	3.80	2.50	2.30	2.50	2.20	2.60	2.15	2.30	2.25
June.....	3.60	2.60	2.30	2.40	1.80	2.60	2.15	2.30	2.25
July.....	3.60	2.70	2.30	2.45	1.80	2.60	2.15	2.50	2.50
August.....	3.85	2.70	2.50	2.50	1.80	2.30	2.40	2.50	2.50
September.....	3.90	2.70	2.50	2.70	1.80	2.30	2.50	2.50	2.50
October.....	3.90	2.70	2.60	2.95	2.25	2.30	2.60	2.60	2.75
November.....	3.90	2.70	2.70	3.10	2.25	2.50	2.60	2.75	2.90
December.....	3.90	2.70	2.70	3.10	2.25	2.50	2.70	2.75	3.00
Average.....	3.92	2.91	2.49	2.70	2.29	2.43	2.41	2.52	2.58

¹ All prices are converted to a basis of 3.5 per cent milk. The butterfat differential is 4.5 cents for each one-tenth per cent.

TABLE 21.—*Weighted average milk prices in dollars per 100 pounds, f. o. b., city market, received by members of the Twin City Milk Producers Association, 1918-1928*¹

Month	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
January.....	2.80	3.30	3.15	2.65	1.95	2.68	2.48	2.20	2.35	2.48	2.57
February.....	2.70	2.57	3.05	2.40	1.90	2.50	2.41	2.20	2.25	2.50	2.50
March.....	2.50	3.12	3.80	2.33	1.90	2.47	2.20	2.23	2.20	2.50	2.52
April.....	2.42	3.00	3.90	2.25	1.93	2.42	1.80	2.23	2.12	2.50	2.48
May.....	2.31	2.95	2.70	1.75	1.85	2.35	1.80	2.29	2.15	2.35	2.42
June.....	2.25	3.00	2.70	1.60	1.82	2.25	1.85	2.20	2.18	2.31	2.43
July.....	2.30	3.05	2.57	1.80	2.00	2.35	1.85	2.20	2.25	2.31	2.48
August.....	2.55	3.15	3.21	2.15	2.10	2.75	2.20	2.33	2.27	2.38	2.56
September.....	2.75	3.10	3.25	2.25	2.42	2.68	2.20	2.65	2.32	2.48	2.65
October.....	3.20	3.10	3.42	2.25	2.55	2.62	2.20	2.70	2.41	2.60	2.64
November.....	3.50	3.15	3.23	2.25	2.65	2.52	2.25	2.70	2.50	2.63	2.60
December.....	3.70	3.15	3.00	2.10	2.80	2.50	2.22	2.65	2.52	2.63	2.61
Average.....	2.75	3.05	3.16	2.15	2.16	2.51	2.12	2.38	2.29	2.47	2.54

¹ All prices are converted to a basis of 3.5 per cent milk. The butterfat differential is 5 cents for each one-tenth per cent.

TABLE 22.—*Retail monthly price of milk in cents per quart delivered to family trade in indicated markets, 1920-1928*

Market and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Boston:												
1920.....	17	17	17	17	16	16	17	17.5	18	18	18	18
1921.....	17	16.5	16	15.5	15	15	15	16	15.5	15	15	15
1922.....	13.5	13.5	13.5	13.5	12.5	12.5	13.5	13.5	13.5	14.5	14.5	14.5
1923.....	14.5	14.5	14.5	13.5	13.5	13.5	14	14.5	14.5	14.5	15.5	15
1924.....	14.5	13.5	12.5	12	12	12	12.5	13.5	14.5	14.5	14.5	14.5
1925.....	14.5	14.5	13.5	13.5	13.5	13	14	14.5	14.5	14.5	14.5	14.5
1926.....	14.5	14.5	14.5	14.5	14.5	13.5	14.5	14.5	14.5	14.5	14.5	15
1927.....	14	14	14	14	14	14	14	15	15.5	15.5	15.5	16.5
1928.....	16	15.5	15.5	14.5	14.5	14.5	14.5	12.5	15.5	15.5	15.5	15.5
New York:												
1920.....	18	16.5	16.5	15	15	15	16	17	18	18	18	17
1921.....	17	16	15	-----	-----	14	14	15	15	15	15	15
1922.....	15	15	15	-----	-----	13	13	14	15	15	15	16
1923.....	16	15	15	15	14	14	14	14	15	15	16	15
1924.....	15	14	14	14	13	13	13	13	14	14	15	15
1925.....	15	15	15	15	15	14	14	15	15	15	15	15
1926.....	15	15	15	15	15	15	15	15	15	15	15	15
1927.....	15	15	15	15	15	15	15	15	16	16	16	16
1928.....	16	16	15	15	15	15	15	16	16	16	16	16

TABLE 22.—Retail monthly price of milk in cents per quart delivered to family trade in indicated markets, 1920-1928—Continued

Market and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Philadelphia:												
1920.....	14	14	14	14	14	14	14	15	15	15	15	13
1921.....	13	13	13	13	11	11	11	11	11	11	11	11
1922.....	11	11	11	11	11	11	11	11	11	12	12	12
1923.....	11.5	12	12	12	13	13	13	13	13	13	12	12
1924.....	12	12	12	12	12	12	12	12	12	12	12	12
1925.....	12	12	12	12	12	12	12	12	12	12	12	12
1926.....	12	12	12	12	12	12	12	12	12	13	13	13
1927.....	13	13	13	13	13	13	13	13	13	13	13	13
1928.....	13	13	13	13	13	13	13	13	13	13	13	13
Baltimore:												
1920.....	16	16	16	16	16	16	16	16	16	16	16	15
1921.....	15	15	14	14	14	12	12	12	12	12	12	12
1922.....	12	12	12	12	12	12	12	12	12	12	12	13
1923.....	13	13	13	13	13	13	13	12	14	14	13	13
1924.....	13	13	13	13	13	13	13	13	13	13	13	12.5
1925.....	13	13	13	13	12	13	13	13	13	13	13	13
1926.....	13.5	13	13	13	13	13	13	13	13	14	14	14
1927.....	14	14	14	14	14	14	14	14	14	14	14	14
1928.....	14	14	14	14	14	14	14	14	14	14	14	14
Pittsburgh:												
1920.....	16	16	16	15	15	15	15	16	16	16	16	16
1921.....	15	15	14	14	14	14	14	14	14	14	14	13
1922.....	13	12	12	12	12	12	12	12	12	12	14	14
1923.....	15	14	14	14	14	14	14	14	14	15	15	15
1924.....	14	14	14	14	14	14	14	14	14	14	14	14
1925.....	14	14	14	14	14	14	14	14	14	14.5	14.5	14.5
1926.....	14.5	14.5	14.5	14	13	13	13	14	14	14	14.5	15
1927.....	15	15	15	14	14	14	14	14	14	15	15	15
1928.....	15	14	14	13	13	13	13	14	14	15	15	15
Cincinnati:												
1920.....	15	15	15	15	15	15	15	15	15	15	15	15
1921.....	15	14	14	14	13	13	13	13	13	13	13	13
1922.....	13	12	12	12	12	12	12	12	12	12	12	12
1923.....	12	12	12	12	12	12	12	12	12	14	14	14
1924.....	14	14	14	14	14	14	14	14	14	14	14	14
1925.....	14	14	14	14	14	14	14	14	14	14	14	14
1926.....	14	14	14	14	14	14	14	14	14	14	14	14
1927.....	14	14	14	14	14	14	14	14	14	14	14	14
1928.....	14	14	14	14	14	14	14	14	14	14	14	14
Chicago:												
1920.....	15	15	14	14	14	14	15	16	16	16	15	14
1921.....	14	14	14	14	14	14	14	14	12	12	12	12
1922.....	12	12	12	12	12	12	12	12	12	12	12	12
1923.....	12.5	13	13	13	13	13	14	14	14	14	14	14
1924.....	14	14	14	14	14	14	14	14	14	14	14	14
1925.....	14	14	14	14	14	14	14	14	14	14	14	14
1926.....	14	14	14	14	14	14	14	14	14	14	14	14
1927.....	14	14	14	14	14	14	14	14	14	14	14	14
1928.....	14	14	14	14	14	14	14	14	14	14	14	14
Minneapolis:												
1920.....	13	13	13	13	13	13	13	14	14	14	14	14
1921.....	13	12.5	12	12	11	10	10	11	11	11	11	10.5
1922.....	10	10	10	10	10	10	10	10	11	11	11	11.5
1923.....	11	11	11	11	11	11	11	12	12	12	12	12
1924.....	12	12	12	10	10	10	10	11.5	11	11	11	11
1925.....	11	11	11	11	11	11	11	11	12	12	12	12
1926.....	12	11	11	11	11	11	11	11	11	11	11	11
1927.....	10	11	11	11	11	11	11	11	11	12	12	12
1928.....	12	12	12	12	12	12	12	12	12	12	12	12
Los Angeles:												
1920.....	16	16	16	16	16	16	18	18	18	18	18	18
1921.....	18	16	16	16	16	16	15	14	14	14	14	14
1922.....	14.5	14	14	14	14	14	14	14	14	14	15	15
1923.....	15	15	15	15	15	15	15	15	15	15	15	15
1924.....	15	15	15	15	15	15	15	15	15	15	15	15
1925.....	14	14.5	15	15	15	15	15	15	15	15	15	14.5
1926.....	15	15	15	15	15	15	15	15	15	15	15	15
1927.....	15	15	15	15	15	15	15	15	15	15	15	15
1928.....	15	15	15	15	15	15	15	15	15	15	15	15

Date from yearbooks of United States Department of Agriculture except for 1928.
Prices for 1928 are from Crops and Markets.

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April 23, 1930

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